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Musselshell
Conservation
District,
Wheatland County,
Montana

UPPER MUSSELSHELL CONSERVATION DISTRICT

WHEATLAND COUNTY, MONTANA

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LONG RANGE PLAN FOR RESOURCE AND CONSERVATION DEVELOPMENT

DEVELOPED BY THE BOARD OF SUPERVISORS
IN COOPERATION WITH THE SOIL CONSERVATION SERVICE
JULY 1976

USDA-SCS-PORTLAND, OR 1976

SECTION I

SECTION II PROBLEMS - POLICIES

SECTION III INVENTORY

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FOREWORD

The Upper Musselshell Conservation District Long Range Program is a guide to assist the District supervisors and others with the overall management and development of the natural resources in the county. This program was prepared by the Board of Supervisors with the assistance of the Soil Conservation Service, numerous individuals, groups, and local, state and other federal agencies.

SECTION I deals with the overall operations of the District program including authorizations, history, and responsibilities of the governing body.

SECTION II outlines the policy as adopted by the District board. These statements provide the direction for management and development of District resources.

SECTION III includes an inventory of the resources in the District and presents a detailed analysis of the current resource situation.

SECTION IV outlines the broad objectives, goals, and priorities which the District will strive to achieve through the implemention of this program.

SECTION V deals with various alternatives available to the District to use in implemention of this program to attain the goals they have established.

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"When we were calves we could hop across this ditch!"

TABLE OF CONTENTS

	PAGE NO.
Foreword	I
Table of Contents	II
Section I	
Perspective - Purposes	
A. General	1
B. Purposes	1
C. Jurisdiction	3
D. Method	3
E. Authoriaztion	4
F. Organization, Location, Acreage	7
G. Responsibilities	7
Section II	
Problems and Policies	8
Section III	
Inventory	
A. Agricultural Income	10
B. Climate	13
C. City of Harlowton	17
D. Conservation Plans	19
E. Erosion Hazard Areas	21
F. Farms Types - Tenure	23
G. Fish and Wildlife	25
H. Geology	29
I. Cropland	32
J. Soil Association	35
K. Income	39
L. Land Capability Classification	42
M. Land Ownership	45
N. Land Use	47
O. Population	49
P. Public Facilities	53
Q. Mineral Deposits	55
R. Pasture	56
S. Range and Pasture	58
T. Recreation and Historic Areas	63
U. Taxation	65
V. Transportation and Marketing	67
W. Water Resources	69

Section IV
Problems and Opportunities

A. Introduction 72
B. Water Resources 73
C. Range and Pasture 74
D. Transportation and Marketing 75
E. Cropland 76
F. Land Capability Classification 77
G. Fish and Wildlife Resources 78
H. Conservation Plans 79
I. Climate 80

Section V

Implmentation 81
Adoption 84

SECTION I
PERSPECTIVE - PURPOSE

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I. PERSPECTIVE - PURPOSES

A. GENERAL

The Upper Musselshell Conservation District Program is a local level plan of assistance to Conservation District land occupiers for soil and water conservation and related natural resource uses based on land capability. The C.D. in part contributes to:

1. Resource conservation and development planning;
2. Comprehensive land use planning;
3. Environmental enhancement planning; and

THE PLAN INVOLVES

1. Obtaining and reacting to public involvement;
2. Recognizing problems and opportunities for wise use and development;
3. Establishing policy;
4. Setting goals;
5. Establishing priorities;
6. Securing financing, technical and other assistance;
7. Inventorying and analyzing the natural resources;
8. Determining objectives;
9. Coordinating the implementation efforts of cooperating land occupiers and many resource groups and agencies;
10. Continuing evaluation and updating to reflect changing situations.

B. PURPOSES

1. SOIL CONSERVATION DISTRICT

The primary purpose of the District is preventing soil erosion. In doing this, the District necessarily becomes involved in water conservation, rangeland management, forestry, and all related land uses.

Assistance has come primarily from agricultural agencies. It is anticipated that other agencies and programs, such as the Department of Housing and Urban Development, the Environmental Protection Agency and the Federal Revenue Sharing Program may provide more assistance.

Increased pressures and demands for land as a place to live, work and play are expanding the District's role. The District has traditionally been oriented toward agriculture, for this is the use to which most land and water has been put.

Coupled with this public pressure for a wider diversity of uses is increasing demand for a quality environment. Consequently, additional purposes of this program are to plan measures for pollution control and abatement to include ecological consideration in determining the highest and best use of land within its capabilities, and to choose intelligently amoung the many competitive uses. The latter purpose involves consideration of the multiple use concept as opposed to single use, plus an evaluation of trends toward regulation that might be used to effect proper enhancement of water quality, natural beauty, and wildlife; preservation of scenic qualities, historic sites, and unique natural areas; and improvement of environmental health, job opportunities and education of the public.

2. ADMINISTRATIVE GUIDE

This plan will serve as an administrative guide for supervisors and is an outline of the means whereby the board of supervisors hopes to coordinate efforts for the orderly management of the natural resources on all lands in the District.

3. REFERENCE

This plan will serve as a refernece for technicians, county commissioners, land use planners, community planners, researchers, educators and others working with the District program to follow as provided in Memoranda of Understanding or other appropriate agreements.

4. ANNUAL WORK PLAN

This plan will serve as a basis for developing the Annual Plan of District Operations.

5. INFORMATION

This plan will serve as the basis for an information program. Information will be directed to the public, particularly electors, cooperators, and owners-managers-occupiers-developers, legislators, county commissioners, conservation agencies, and organizations, schools, churches, libraries and planning and development agencies.

6. PROBLEMS AND OPPORTUNITIES

The District program (plan) identifies the conservation problems and opportunities recognized by supervisors, cooperating agencies and advisory groups and outlines measures to correct the problems and/or develop wise management of natural resources. This program attempts to give a history of the District, to explain and evaluate the present condition of the natural resources (soil, water, vegetation and wildlife), the opportunities that exist to protect and develop these resources, and the policies, goals and objectives, and working procedures of the supervisors. This program gives consideration to all private and public lands.

C. JURISDICTION

1. PRIVATE LANDS

Basically the District program has jurisdiction in the private ownership land area and deals with water, soil and related resources. It has, as overall objectives, the treatment of each acre according to its needs and the use of each acre within its capabilities.

2. PUBLIC LANDS

Mutual problems and opportunities for the conservation, development and use of public lands are intended to be correlated with the public land administrators, managers and users.

D. METHOD

Land occupiers voluntarily sign cooperative agreements and agree to develop and carry out a conservation plan with such help and assistance as may be provided by the District and other agencies working through the District. There are also mandatory provisions in the Conservation District law for land use regulations and sediment control.

E. AUTHORIZATION

The District program is authorized under provisions of the Montana Conservation Districts Law, Section 76-233, R.C.M. 1947 as amended, and particularly Section 76-108 (8). Programs are required in Memoranda of Understanding or other appropriate agreements the District has with the following:

1. U.S. Department of Agriculture dated June 4, 1973
a) Soil Conservation Service dated December 14, 1963
b) Forest Service dated January 13, 1966
c) Agricultural Research Service
d) Farmers Home Administration
e) Agricultural Stabilization and Conservation Service

2. U.S. Department of Interior
a) Bureau of Land Management

3. Montana Department of Natural Resources and Conservation

4. Montana Department of State Lands

5. Montana Fish and Game Commission

6. Montana Extension Service

Informal working relations have been established or are desired for cooperation and assistance from the following:

1. Federal Government

a) U.S. Department of Interior

1. Bureau of Outdoor Recreation

2. Bureau of Reclamation

3. Bureau of Sport Fisheries and Wildlife

b) U.S. Department of Commerce

1. Office of Economic Opportunity

c) U.S. Department of Health, Education and Welfare

d. U.S. Department of Housing and Urban Development

e. U.S. Department of Labor
   (1) Economic Development Administration (EDA)

f. U.S. Environmental Protection Agency

g. Others.

2. STATE GOVERNMENT

a. Montana Highway Commission

b. Montana Environmental Quality Council

c. Employment Security Commission

d. Montana Department of Community Afairs

e. Montana Department of Health and Environmental Sciences

f. Montana Library Commission

g. Montana Department of Fish and Game

h. Montana Department of State Lands

i. Others

3. LOCAL GOVERNMENT

a. County Commissioners

b. City Council

c. City-County Planning Boards

d. County Planning Boards

e. County Superintendent of Schools

f. School Districts

g. Upper Musselshell Water Users Association

4. NON-GOVERNMENTAL

Informal working relations have been established or are desired with association having resource interests as:

a. Development Groups,

b. Cattlemen Associations,

c. Woolgrowers,

d. Graingrowers,

e. Marketing groups,

f. Sportsmen groups,

g. Conservation Organizations,

h. Trout Unlimited,

i. Sierra Club,

j. Rod and Gun Clubs,

k. Others.

Other major laws which relate to the District program are:

1. P.L. 46, Soil Conservation and Domestic Allotment Act of 1936 (USDA Secretary's Memorandum No. 1488 of February 1, 1962);

2. P.L. 566, Watershed Protection and Flood Prevention Act of 1954;

3. P.L. 87-703, Section 102 of the Food and Agriculture Act of 1962, Resource Conservation and Development Program;

4. P.L. 91-190, National Environmental Policy, January 1, 1970.

5. P.L. 92-419, Rural Development Act of 1972.

7. P.L. 93-86, Title X, Agriculture and Consumer Protection Act of 1973.

8. Water Quality Rules and Regulations of Department of Health and Environmental Sciences.

9. Floodplain Rules and Regulations of Montana Department of Natural Resources and Conservation.

10. Subdivision Regulations of the Montana Department of Community Affairs and County Commissioners; and

11. S.B. 310 (Natural Streambed and Land Preservation Act of 1975)

12. Section X, Rivers and Harbors Act of 1899

F. ORGANIZATION, LOCATION AND ACREAGE

The District was first organized during April of 1951, as a result of petitions to the State Soil Conservation Committee and a hearing and referendum held, and included 992,640 acres in Wheatland, Golden Valley, and Meagher Counties.

The District's name was "Upper Musselshell Soil Conservation District" until February 14, 1962, when it was changed to "Upper Musselshell Soil and Water Conservation District" which later was changed to "Upper Musselshell Conservation District". These changes reflect broader resource conservation and development responsibilities assumed by the District and changes in the law. The original supervisors were Dillard Cates, Ed Settle, Matt Fochs, Rolly McElvain, Ed Langston, and John Rietz, Sec. Tres.

G. RESPONSIBILITIES

The supervisors are elected by qualified electors within the District. They form the governing body of the Conservation District, with broad authorities as outlined in the Conservation Districts Law to develop and carry out a resource conservation and development program. The Montana Department of Natural Resources and Conservation and supervisors can request state and county funds for the operation of the District.

SECTION II PROBLEMS - POLICIES

II. PROBLEMS AND POLICIES

It is the Upper Musselshell Conservation District's policy to work cooperatively with other groups, to better achieve mutual objectives related to sound soil and water conservation planning. The District will cooperate with local planning bodies by exchanging information and other resources and by assisting with necessary coordination. In addition, the long range plan is designed to carry out the District program with respect to the conservation of soil and water resources, control and prevention of soil erosion and prevention of flood water and sediment damages. It shall further be the District's aim to prevent impairment of dams and reservoirs, protect the tax base, assist in furthering the natural resource policies and programs of the state and help carry out land use policies and regulations as provided in the Montana Conservation Districts Laws and other Montana Statutes.

Specifically, the Upper Musselshell Conservation District adopts the following vital elements for its long-range use planning program:

A. Education and information programs are needed to convey a basic understanding of the need for proper land use to all segments of society. Land use policies and plans must be developed with broad public involvement to ensure citizen support and understanding.

B. Consideration must be given to the needs and desires of the people for productive soils and quality environment to ensure citizen support and understanding.

C. The land's capabilities, limitations and potentials are identified by soils and other related resource inventories.

D. Development which results in unsightly urban sprawl should be discouraged.

E. Fundamental changes in land use, such as converting productive agricultural lands to nonagricultural land uses or increasing the intensity of a single land use should be considered only after an evaluation of the long-term ecological, social and economic effects.

F. Land use policies should consider the impact and influence of the property tax structure. Tax structures should encourage agriculture, wildlife, recreation, and similar uses of land in the public interest.

G. Land use policies and plans need periodic review to determine changes in land resource use which are consistent with environmental and social needs.

H. The rights to economic opportunity and freedom of choice in the use of land should remain with the landowner so long as they do not destroy the resources or conflict with a safe, clean, and healthy environment for society.

I. Land use policies should be oriented toward protection of the natural integrity of public lands, which are an integral part of our history and way of life in Montana.

AGRICULTURAL INCOME

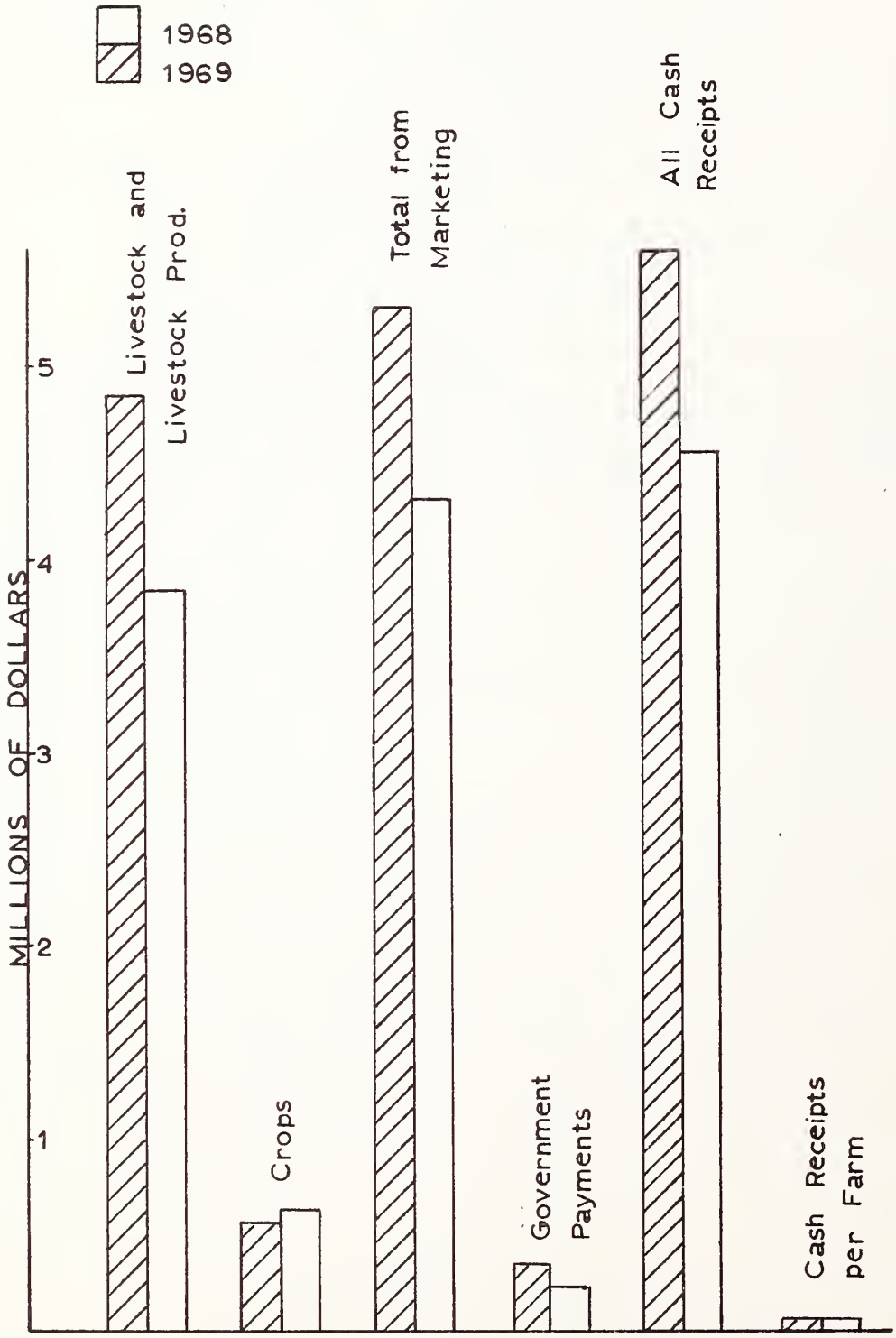
Agriculture is the leading industry in the District. Cash farm receipts from the sale of agricultural products rose from 5.6 million dollars in 1970 to 10.1 million dollars in 1973. Livestock and livestock products accounted for 82% of the total cash receipts during this period.

The following table shows the average cash receipts per farm as compared to the average for the state.

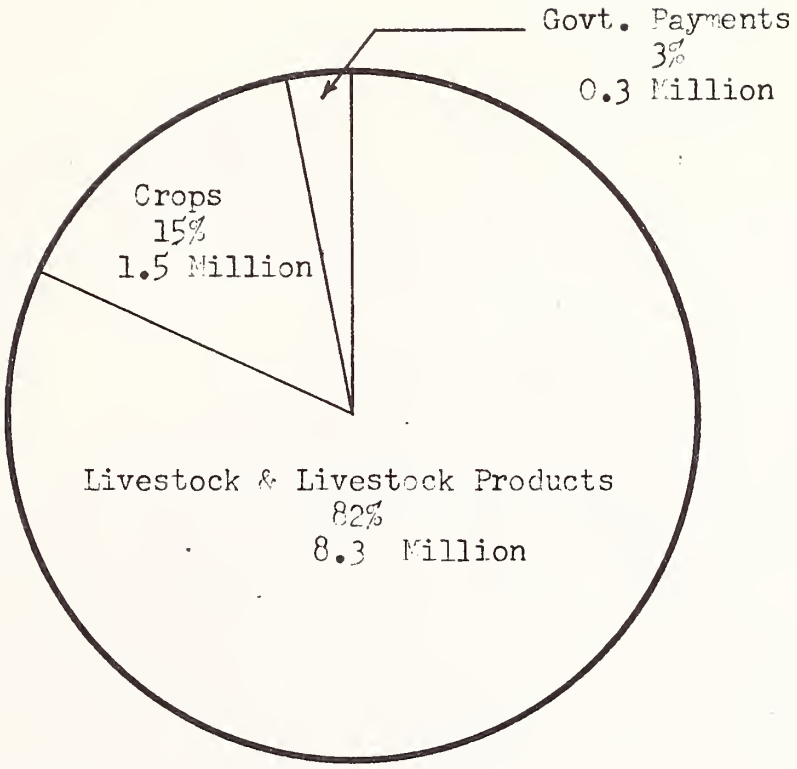
Cash Receipts/Farm	1970	1971	1972	1973
County Average	32,400	40,000	46,100	60,800
State Average	26,100	30,500	37,000	45,500

In 1973, farms in the District ranked 42nd among all Montana Counties in average cash receipts per farm.

CASH RECEIPTS by SOURCE



AGRICULTURAL INCOME
1973*



*1973 Montana Agricultural Statistics

FARMS BY ECONOMIC CLASS*

Class	Sales	No. of Farms	% of Farms
I	$40,000 and under	33	20
II	20,000 - 39,999	34	21
III	10,000 - 19,999	25	15
IV	5,000 - 9,999	19	12
V	2,500 - 4,999	24	15
VI	50 - 2,499	7	4
Part - Time		12	7
Part - Retirement		9	6

*1969 Census of Agriculture

CLIMATE

Climate in the District can be described as semiarid with cold winter, moderately warm summers and marked variation in seasonal precipitation. The average annual precipitation at the weather station in Harlowton is 13 inches. Due to the great variation in topography in the District, the annual precipitation varies from as high as 20-30 inches in the mountainous areas to as low as 10 inches in the valleys.

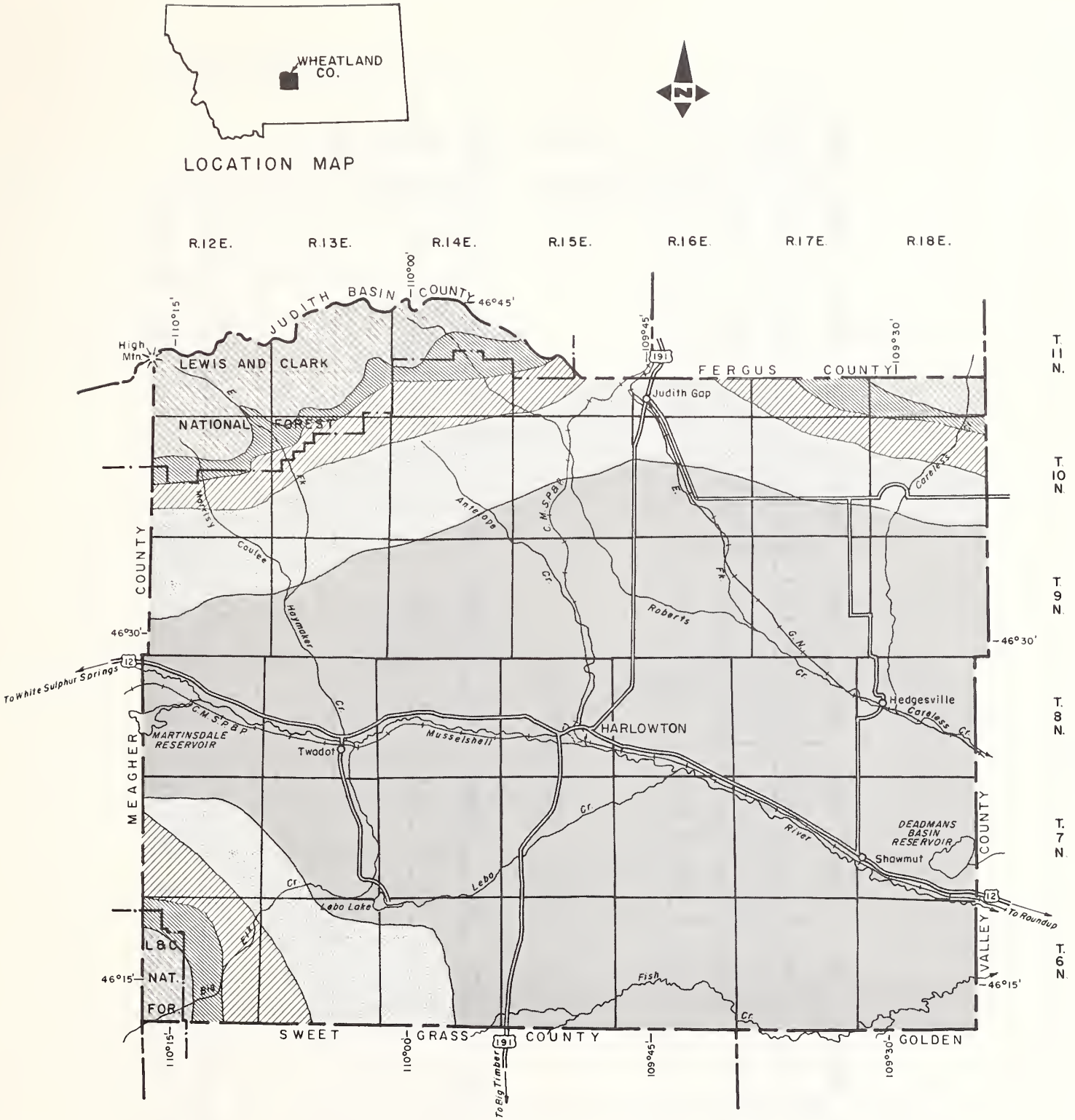
June is normally the wettest month followed by May, July, August, and September. Approximately 70% of the annual precipitation occurs during the growing season of April to September.

Some very cold weather can be expected each winter. However, these cold spells generally last only a few days. Temperatures below zero have occured from October through March. Mild winters are not uncommon.

Summer temperatures are generally warm with a few days above 100° occuring in July and August. The average summer temperature is around $66\text{-}70^{o}$.

The average growing season is approximately 90 to 120 days, but can vary considerably from year to year.

Wind is common throughout the year prevaling mostly from the northwest. Winds of sufficient speeds to cause soil erosion can occur during any month.



ANNUAL PRECIPITATION

- 10-14 Inches
- 14-16 Inches
- 16-18 Inches
- 18-20 Inches
- 20-30 Inches

ANNUAL PRECIPITATION

WHEATLAND COUNTY, MONTANA

JULY 1975

5 0 5 10 MILES

SCALE 1:500,000

U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE USDA-SCS-PORTLAND, OREG. 1975

M7-OL-23485-9

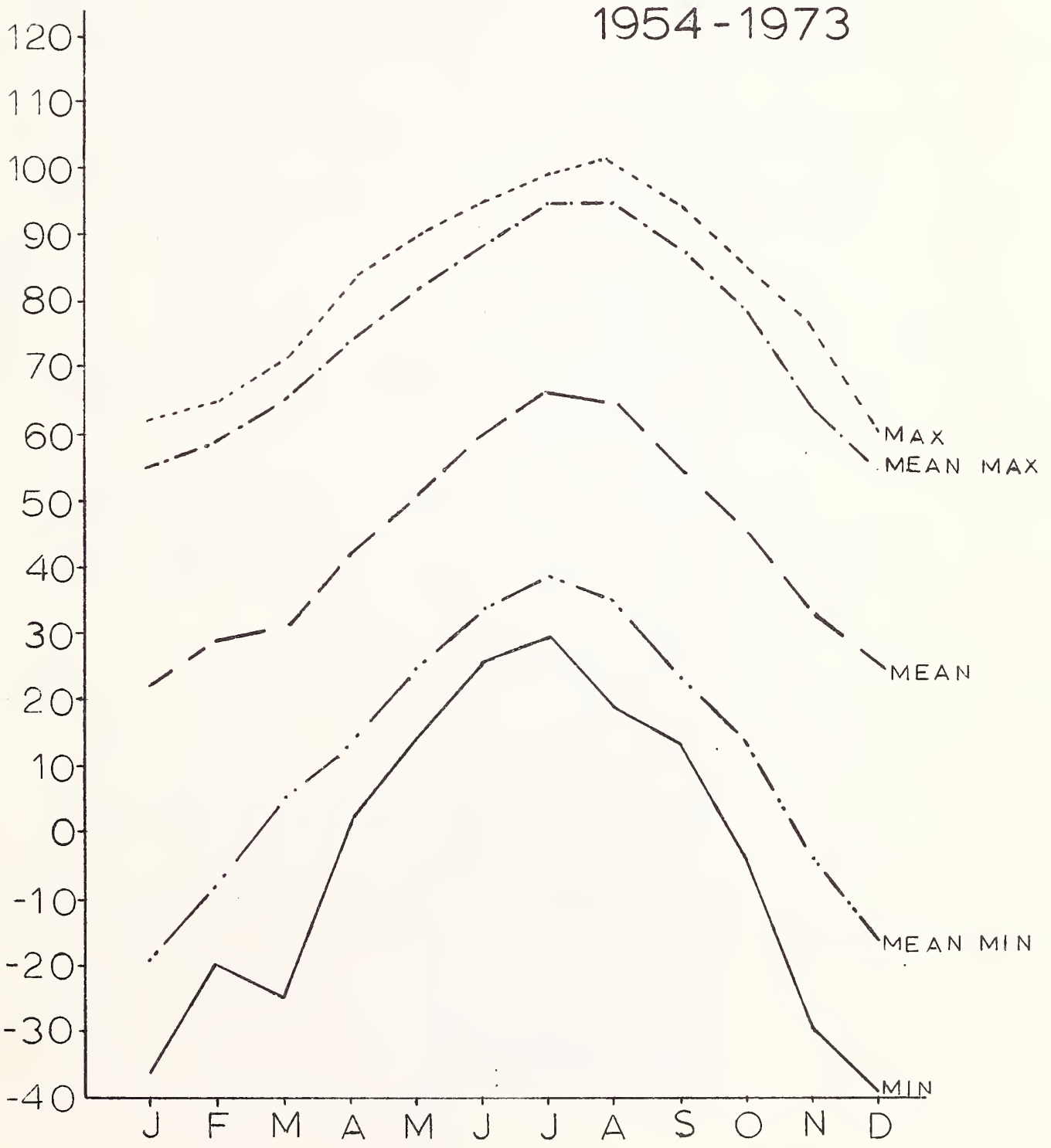
PRECIPITATION

1954-1973	Jan.	Feb.	March	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann.
Mean Monthly	.47	.37	.54	.88	2.36	3.26	1.27	1.11	1.04	.72	.48	.40	12.9
Max.	1.73	1.16	1.47	1.48	5.73	7.12	5.23	3.25	2.93	1.55	1.32	.97	
Min.	0	.04	.03	.03	.04	1.01	0	.19	0	.05	0	0	

TEMPERATURE

1954-1973	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann.
Mean Monthly	21	27	32	41	51	59	66	65	55	46	34	27	44
Mean Daily Max.	55	58	64	73	82	90	94	94	87	79	64	55	75
Mean Daily Min.	-19	-8	-5	12	24	34	39	35	23	13	-3	-13	11
Higest	62	65	72	84	91	95	100	101	94	85	71	62	
Lowest	-38	-20	-26	3	14	25	30	19	13	-4	-29	-39	

WHEATLAND COUNTY
MEAN TEMPERATURE



CITY OF HARLOWTON

The city of Harlowton with a population of 1,375 is the county seat of Wheatland County. It was first established on June 10, 1900 by Richard Harlow.

Harlowton is a full service community containing the needed medical services of a hospital, medical clinic, two doctors, pharmacist, dentist, optometrist, nursing home, and a volunteer ambulance service.

It contains both a high school and a grade school. A new gym was added to the high school in 1961. The grade school was built in 1955 with a new addition added in 1961. With population trends showing a decrease, the basic plant size will probably be sufficient for a few years.

Fire protection is provided to the community through a volunteer fire department.

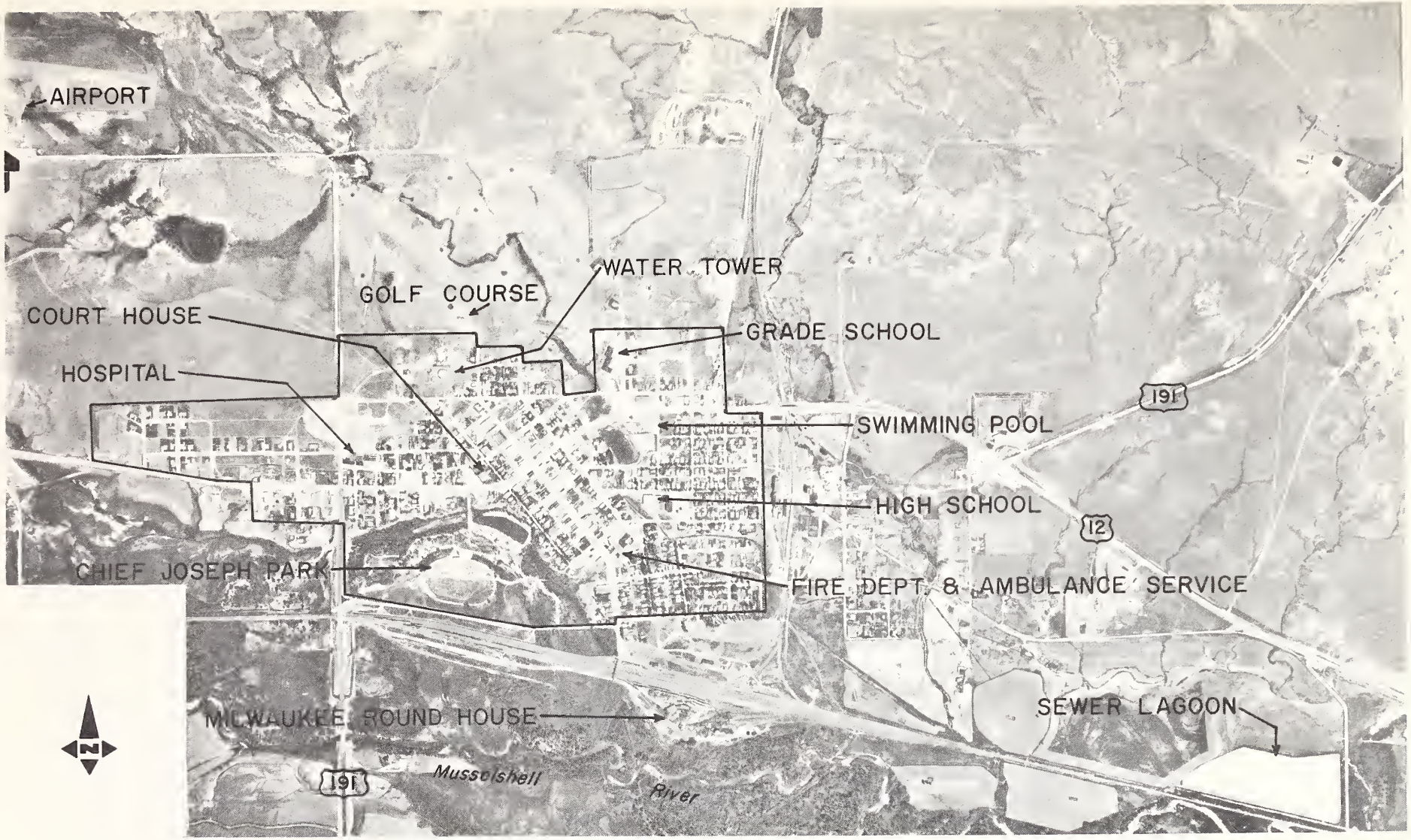
Harlowton contains a variety of retail stores including farm supply and farm equipment dealers. There are also grain elevators which provide a local outlet for the sale of farm produce.

The Harlowton Country Club provides a nine hole golf course for use by local residents. Chief Joseph Park contains a fish pond, campground, and picnic area. Both these areas recieve heavy use during the summer months. A swimming pool is also located in Harlowton.

A land fill garbage disposal area is located just north of Harlowton. A sewage lagoon is located east of town. A number of wells located within the townsite provide good quality water to residents.

A watershed project was built on Jaw Bone Creek north of Harlowton in 1967. It protects the city from possible flood danger.

The Milwaukee Railroad and agriculture are the two largest industries that form the economic base for Harlowton.



CITY OF HARLOWTON

POPULATION 1,375

WHEATLAND COUNTY, MONTANA

JULY 1975

1000 0 1000 2000 3000 4000 5000 FEET

SCALE 1:20,000

U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE USDA-SCS PORTLAND, OREG. 1975

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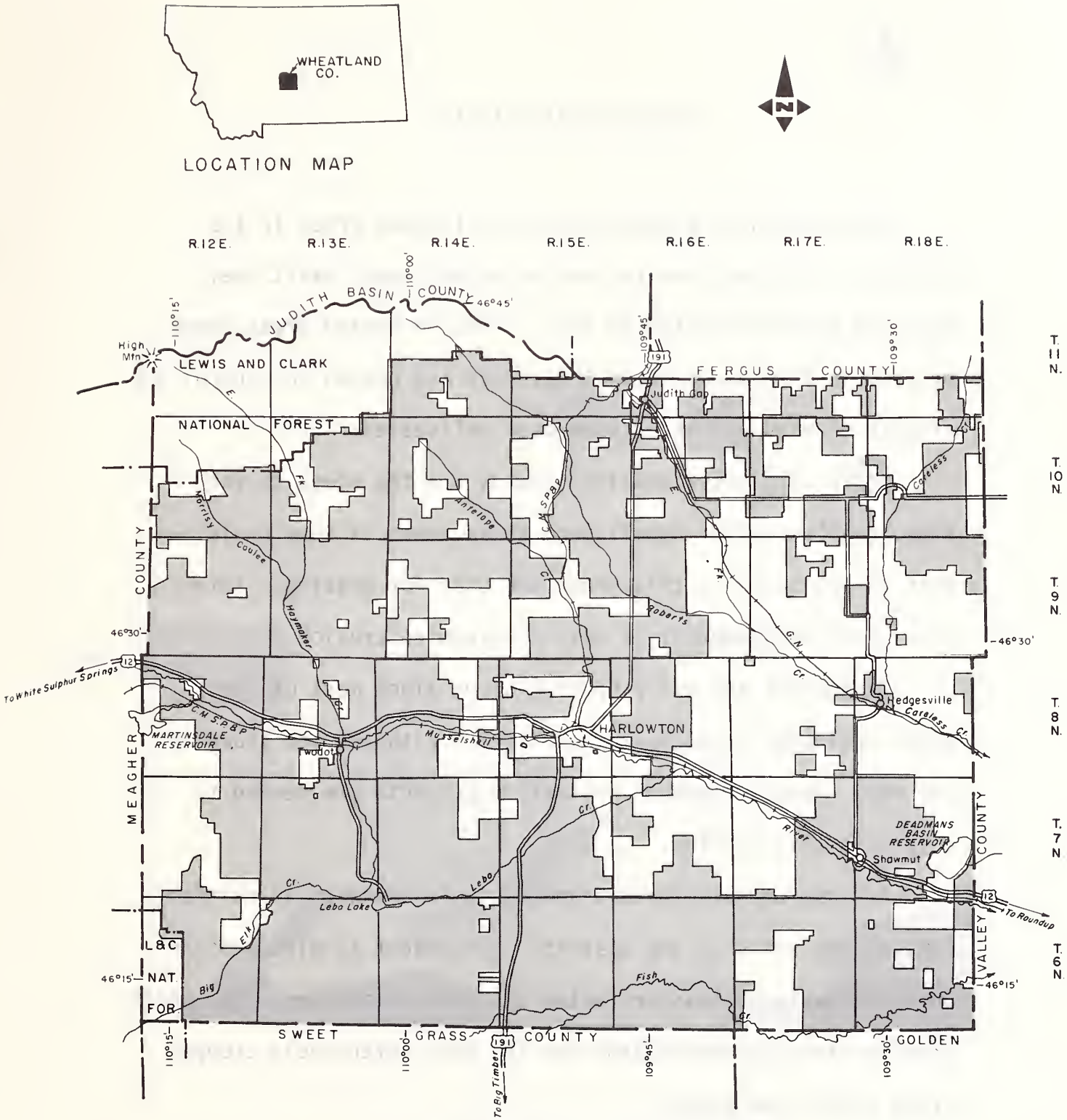
CONSERVATION PLANS

Approximately 101 operators have signed cooperative agreements with the District and have completed conservation plans for the development of the natural resources. This totals approximately 714,360 acres or 78% of the land area in the District. These planned acres occurr uniformly throughout the District as shown on the Conservation Planning Map. Because of the constant change in land use, land ownership and consolidation, there is a continuing need for revision of these plans as well as expanding planned conservation to each acre in the District. The following table shows conservation plans by age distribution.

	No.	% of Total
PLANS LESS THAN 5 YEARS	25	24%
PLANS 5 TO 10 YEARS	38	38%
PLANS OVER 10 YEARS	38	38%

Of the 101 conservation plans, 28 were developed under the Great Plains Conservation Program started in 1958. Lands under the Great Plains Conservation Program total approximately 249,128 acres or 27% of the land used for crops and livestock.



CONSERVATION PLANNING PROGRESS

Land under Conservation Plan

NOTE: Since 1975 new plans or the revision of old plans have been made for approximately 52,840 acres not shown on the map on pg. 20. This additional acreage includes most of the unshaded area in Township8 & 9 North in Range 18 East. The total planned acres on pg. 19 reflects this addition.

CONSERVATION PLANNING PROGRESS

WHEATLAND COUNTY, MONTANA

JULY 1975

5 0 5 10 MILES

SCALE 1:500,000

U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE USDA-SCS-PORTLAND, OREG. 1975

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EROSION HAZARD AREAS

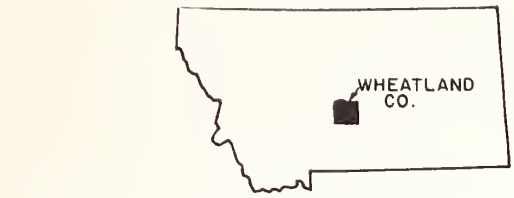
Wind and water erosion occurs in limited areas in the District. Although severe erosion hazard areas exist they have not been delineated as such. Erosion hazard areas where erosion is likely and special measures are needed to control the effects of wind and water have been delineated.

Soils with water erosion hazards are the steep to very steep shallow soils. Runoff from these areas is very rapid. Most of the soils in this group are used for grazing. Intensive grass management is a must to minimize erosion.

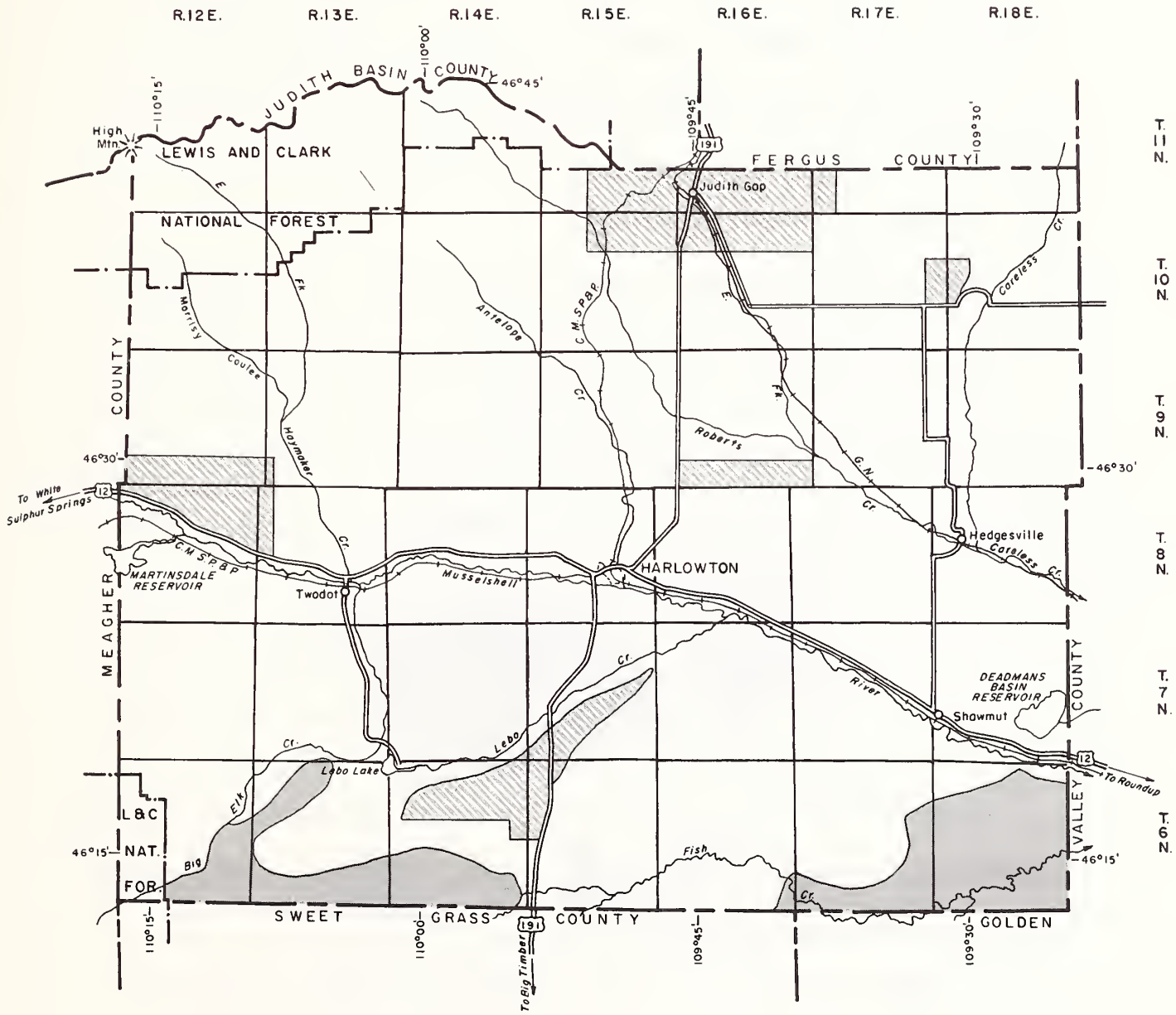
Streambank and gully erosion occur along most of the major drainages throughout the District although not shown on the map. More streambank protection projects are needed to alleviate this problem.

Because of soil texture and variable extremes in rainfall many of the soils in the District are subject to wind erosion when cultivated unless protected by control measures. The soils showing wind erosion hazards are the more intensively cropped areas within the county.

Although not all the soils delineated are subject to severe erosion, the sandier soils are more likely to blow and need intense control measures to hold them in place.



LOCATION MAP



EROSION HAZARD

Subject to Wind Erosion

Subject to Water Erosion

EROSION HAZARD

WHEATLAND COUNTY, MONTANA

JULY 1975

5 0 5 10 MILES

SCALE 1:500,000

FARMS
TYPES AND TENURE

During the period 1954-69 the District experienced a 29% decline in the number of farms in the county. A decline of 15% has occurred from 1969-1974 according to the 1974 Census of Agriculture preliminary report. A continued gradual decline can be expected.

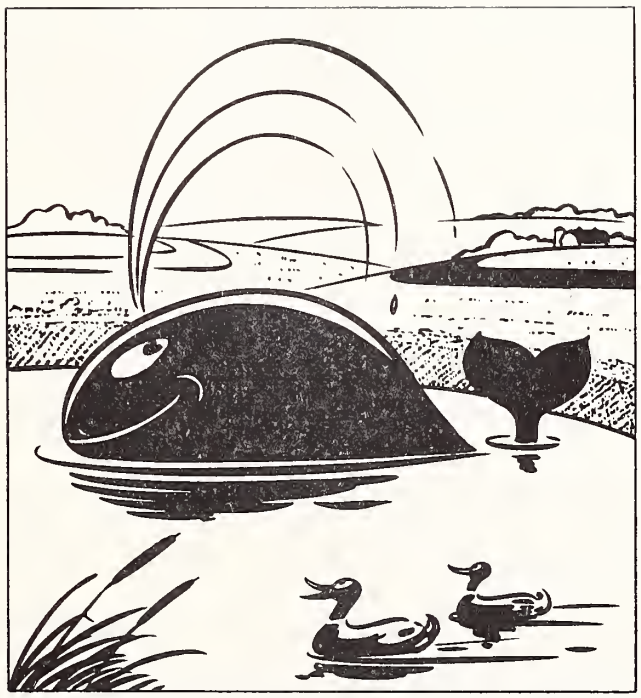
Land values have been increasing steadily. This is beneficial to established farm operators since it increases their borrowing power. This increased value has made it difficult for young people to become established in farming. The average age of operators in the District is 51.5 years.

OWNERSHIP OF FARMS IS AS FOLLOWS:	
Full Owners	58
Part Owners	63
Managers	29

(1974 Census of Agriculture)

A combination cash grain and livestock enterprize is the most common type of farm. Shown below are the number of farms by type of product reported in 1969.

TYPE	NUMBER OF FARMS
Cattle & Calves	146
Milk Cows	38
Chickens	35
Hogs	23
Sheep	50
Horses	86
Wheat	50
Barley	56
Oats	29



"THIS FARM POND MUST HAVE BEEN OVER FERTILIZED!"

FISH AND WILDLIFE

One of the major attractions in the District is its wildlife resources for hunting, fishing and recreation enthusiasts. Most of the land can be considered habitat for wildlife with the exception of the urban built-up areas. Wildlife can therefore be considered a very important part in the economy of the communities.

The Fish and Wildlife Habitat Maps show the major areas of concentration of the various big game and upland game bird species as well as some of the ponds used for year around fishing.

Furbearing species include, muskrat, mink, and beaver. The habitat for these species lies principally along the Musselshell River and its perennial tributaries. A few individuals do some trapping of these species.

The coyote, fox, racoon, bobcat, skunk, and weasel are the main predators.

There are several ponds and reservoirs of adequate size and depth to provide year around fishing. These ponds are stocked by the Montana Department of Fish and Game as well as private individuals.

Over 500 small ponds in the District serve as rest and nesting areas for migratory waterfowl.

SHARP-TAILED GROUSE

BLUE GROUSE AND RUFFED GROUSE

SAGE GROUSE

PHEASANT

GAME BIRD HABITAT

WHEATLAND COUNTY, MONTANA

JULY 1975

U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE USDA SCS PORTLAND, OREG 1975

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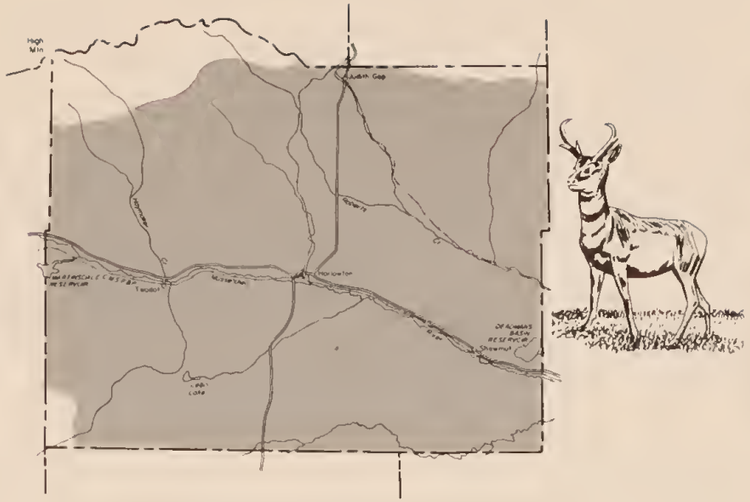
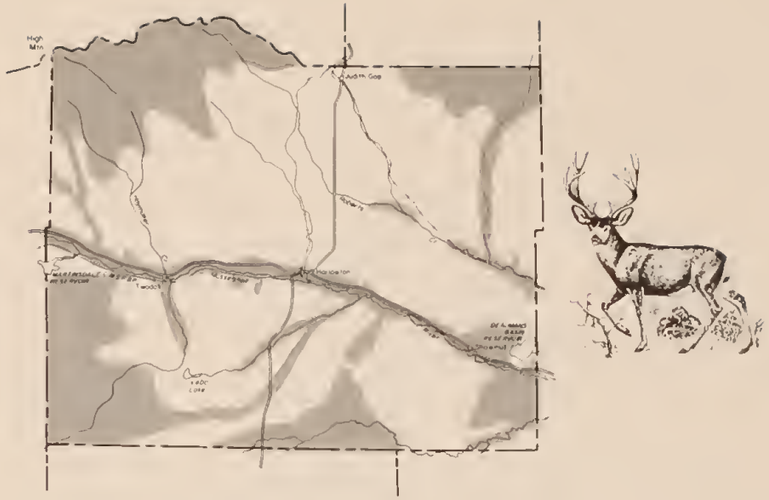
ELK



ANTELOPE



MULE DEER

BEAR

WHITE-TAILED DEER

LOCATION MAP

BIG GAME HABITAT

WHEATLAND COUNTY, MONTANA

JULY 1975

U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE USDA SCS PORTLAND OREG 1975

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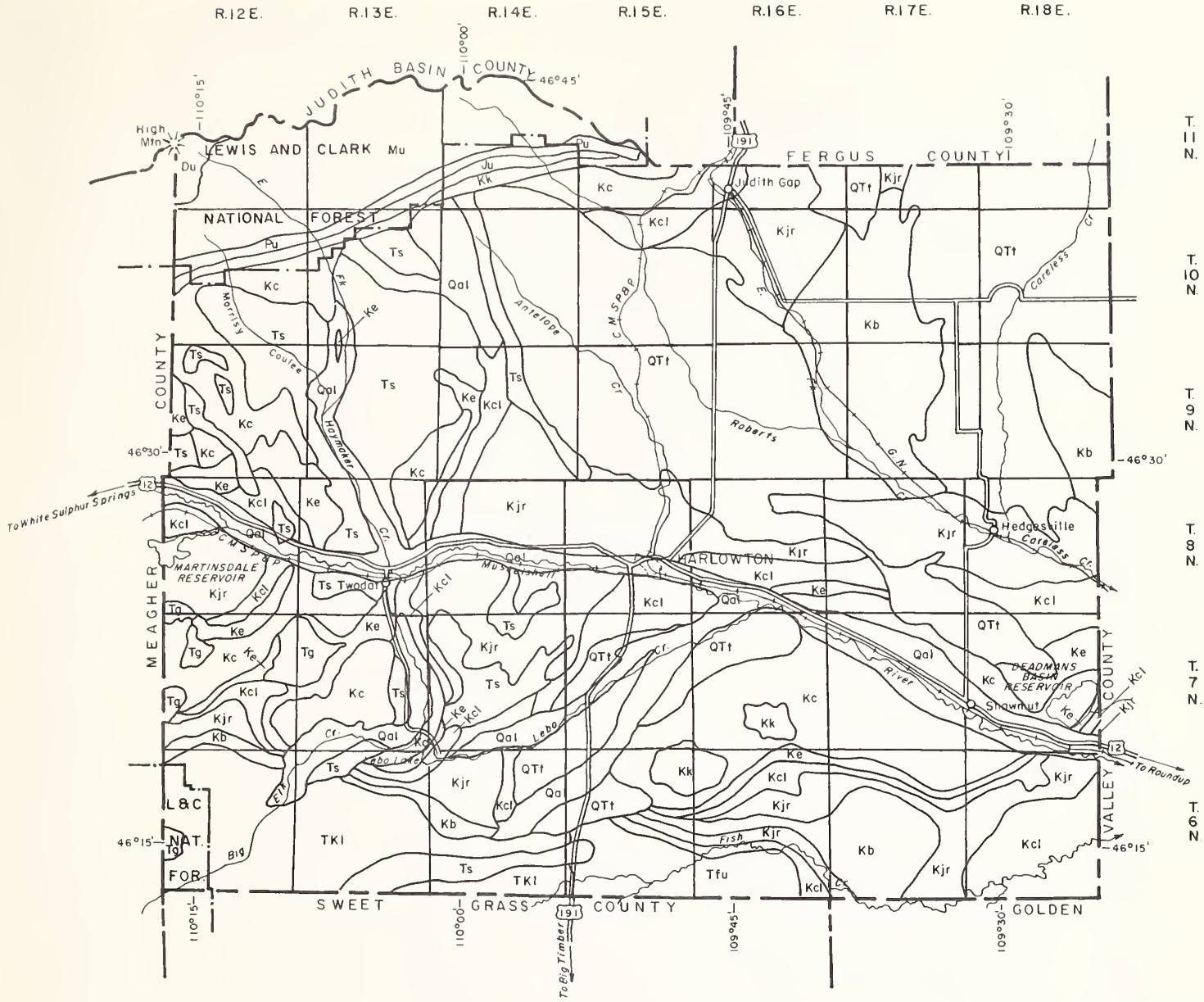


GENERAL GEOLOGY

Qal	Alluvium
QTt	Terroce Deposits
Ts	Tertiary Sedimentary Rocks, Undifferentioted
Tg	Tertiary Coarse Groined Intrusive Rocks
Tfu	Fort Union Formation
Kb	Bear Paw Shale
Kjr	Judith River Formation
Kcl	Cloggett Formation
TKl	Livingston Formation
Ke	Eagle Sandstone
Kc	Colorado Shole
Kk	Kootenai Formation and Associated Rocks
Ju	Jurossic, Undifferentiated
Pu	Pennsylvanian Formation
Mu	Mississippian Formation
Du	Devonian Formation

LOCATION MAP

GENERAL GEOLOGY

WHEATLAND COUNTY, MONTANA

JULY 1975

5 0 5 10 MILES

SCALE 1:500,000

U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE USDA SCS-PORTLAND, OREG 1975

M7-OL-23485-14

EXPLANATION - GENERALIZED GEOLOGIC MAP - WHEATLAND COUNTY
MONTANA

AGE	SYMBOL	THICKNESS	FORMATION NAME AND DESCRIPTION	HYDROLOGIC CHARACTERISTICS
Quaternary	Qal	10-140'	Alluvium-Unconsolidated stream deposited sands, gravels, silts, and clay. Susceptible to surface contamination. Greatest thickness along major drainageways.	Gravels and sands considered good groundwater aquifers. Water quality poor to good. Yields 5 to 250 gpm.
	QTt	up to 80'	Terrace gravels-Unconsolidated to partially cemented stream gravels and sands. Generally high and incised by coulees and stream valleys.	Gravels transmit water freely. Seasonal variations of water table occur due to rapid drainage to incised coulees and valleys. Good quality domestic and stock water available where gravels are not drained. Yields 4 to 15 gpm.
Tertiary	TS		Tertiary sediments-consolidated fine grained sediments. Predominantly silts and clays.	Not considered a dependable groundwater aquifer. Supplies can be developed in old drainage channels. Well developments, however are risky.
	Tg	not known	Tertiary intrusive rock-hard andesite porphyry with some included sediments.	Water only available in fractures. Generally high and drained dry. Not considered a groundwater aquifer.
	Tfu	up to 1800'	Fort Union formation-alternate beds of sandstone, siltstone, and shale with some coal. Consists of three members-The Upper Tongue River, middle Lebo, and lower Tullock. Lebo member is predominantly shale.	Generally yields adequate quantities and quality of water for domestic and stock use. The Lebo member, however, yields small volumes of mineralized water. Average yields of 5 to 10 gpm.

Tertiary through Upper Cretaceous	Kcl	450-550'	Claggett formation-dark shale and grey sandstone becoming increasingly more sandy to the west.	An important aquifer in western Wheatland County. Moderately mineralized water suitable for domestic and stock use. Average yields of 5 to 100 gpm. Becomes shaley and a very poor aquifer in the east and southern portions of county.
Tertiary through Upper Cretaceous	TKl		Livingston formation-water laid volcanic sediments derived from a volcanic landmass in the vicinity of the Crazy Mountains. Includes equivalents to part of the Fort Union, and all of the Hell Creek, Lennep, Bearpaw, Judith River, and Claggett formations.	Yields water suitable for domestic and stock use in most places. Average yield 5 gpm.
Upper Cretaceous	Khc	600'	Hell Creek formation-alternate sandstone clay, and shale.	Yields adequate quantity and quality water for domestic and stock use. Average yields of 5 to 30 gpm.
Upper Cretaceous	Kl	up to 300'	Lennep sandstone-dark, rusty sandstone.	Yields 5 to 30 gpm. Suitable for domestic and stock use.
Upper Cretaceous	Kb	1000-1200'	Bearpaw shale-dark gray marine shale.	Not considered a groundwater aquifer. Water obtained is low volume and highly mineralized.
Upper Cretaceous	Kjr	550'	Judith River formation-upper part consists of alternating sandstone and shale. The middle part is a tan, grey, or white shale. The base is a sandstone unit.	An important aquifer suitable for domestic and stock use. The lower sandstone yields the largest volume and best quality water. The shaley middle section yields mineralized water, and in some cases is not an aquifer. Average yields are 7 to 15 gpm.

Upper Cretaceous	Ke	250'	Eagle sandstone-Predominantly a sandstone unit, with a shaley middle zone. Basal unit is a massive sandstone (Virgelle sandstone member). Becomes harder to the east.	Yields moderately to highly mineralized water - usually suitable for livestock needs. Yields range from 7 to 200 gpm.
	Kc	1800-2200'	Colorado shale-generally a dark grey marine shale. Also includes 1 or 2 permeable sandstone member near the top, the Big Elk sandstone member near the middle, and the Dakota or First Cat Creek near the base.	Most of the Colorado shale is not considered a groundwater aquifer. The Big Elk sandstone locally yields up to 50 gpm of moderately mineralized water The First Cat Creek has not been tested locally.
Lower Cretaceous	Kk	250-450'	Kootenai formation - Alernating beds of maroon and light grey sandy shale with some sandstone in upper part. A coarse grey sandstone (Third Cat Creek) occurs at the base.	Untested in this area.
Jurassic and Paleozoic	Ju Pu Mu Du		Older formations- includes Jurassic, Pennsylvanian, Mississippian, and Devonian aged sedimentary rocks.	Unimportant in most of the county as a source of water due to great depths. In areas where exposed in the far northern part of the county, small supplies of stock and domestic water can be found at lower elevations.
			*Groff, S.L., 1962 Reconnaissance ground water studies, Wheatland, eastern Meagher, and northern Sweet Grass Counties, Mt. Montana Bureau of Mines and Geology, Special Publication #24.	

CROPLAND

The major crops in the District are wheat, barley, oats, and hay. Following is a tabulation of crops by acres for 1973 as taken from the Montana Agricultural Statistics.

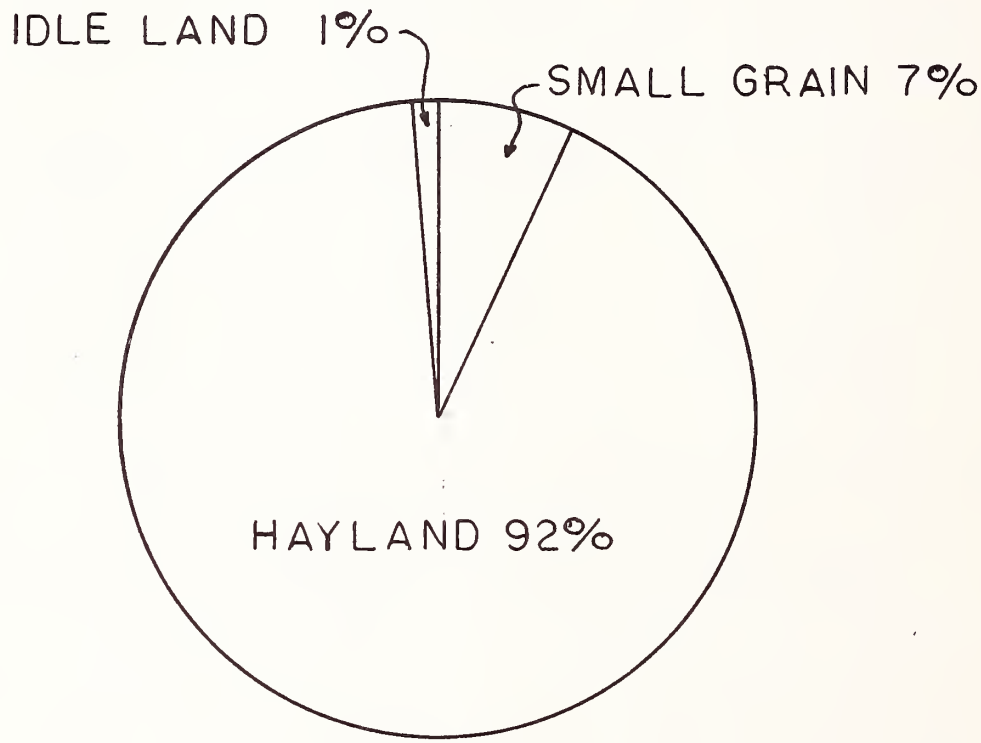
CROP	ACRES HARVESTED	YIELD
Wheat	10,000	14.7 Bu/Ac.
Barley	10,500	19.5 Bu/Ac.
Oats	2,400	19.3 Bu/Ac.
Hay	51,800	1.25 Ton/Ac.

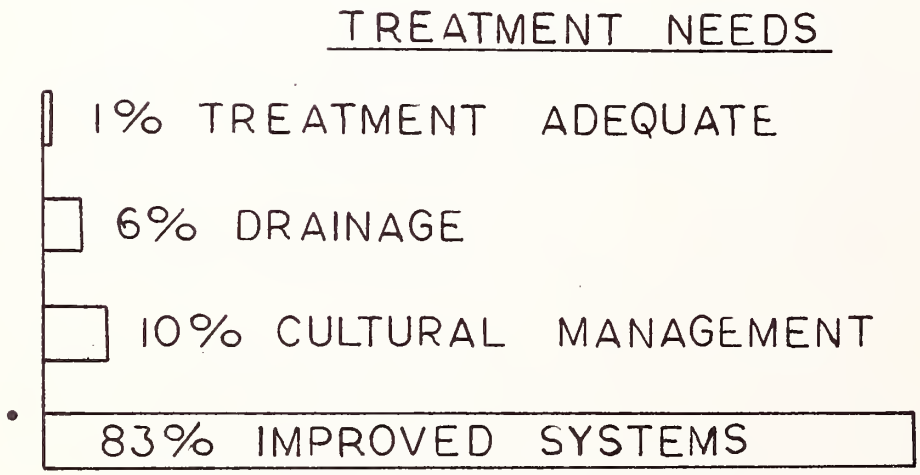
Between 1967 when the Wheatland County Conservation Needs Inventory was completed and 1973 when the Montana Agricultural Statistics was published there was an increase of approximately 1,000 acres of cropland in the District.

There are approximately 26,300 acres of irrigated land in the District and approximately 47,793 acres of non-irrigated cropland.

IRRIGATED CROPLAND

CONSERVATION TREATMENT NEEDS

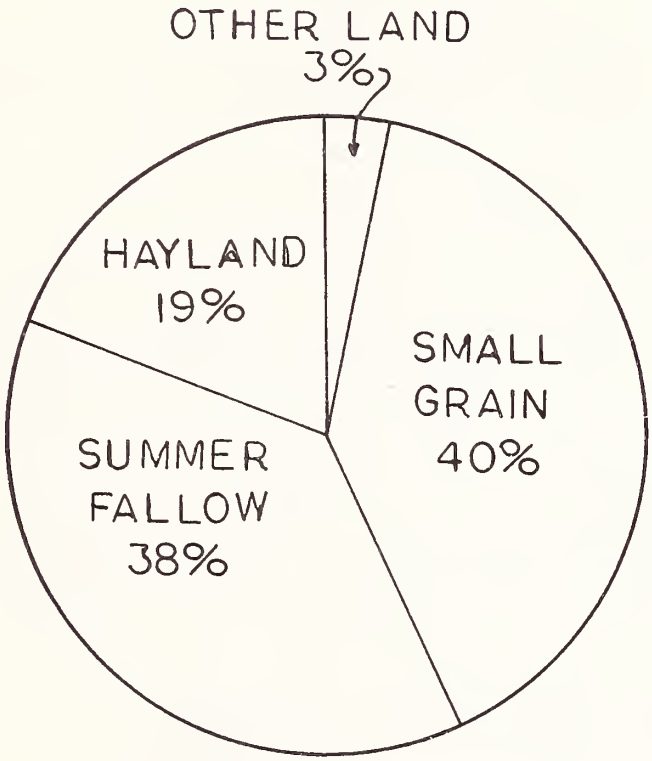


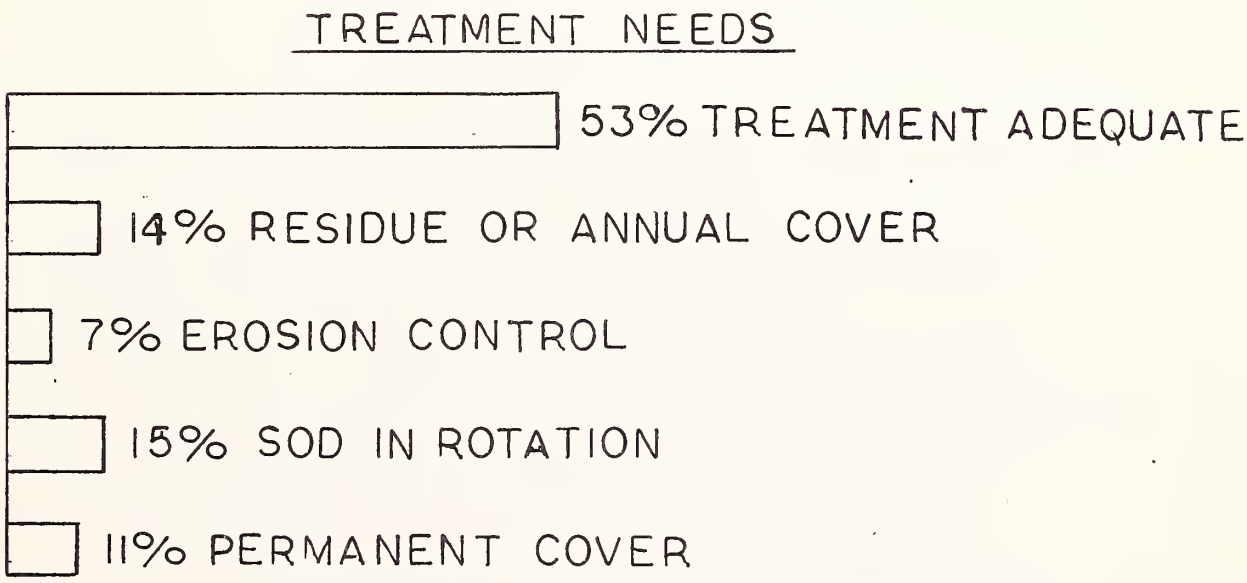


Source: 1967 Conservation Needs Inventory - Wheatland County

DRY CROPLAND

CONSERVATION TREATMENT NEEDS





Source: 1967 Conservation Needs Inventory - Wheatland County

SOIL ASSOCIATIONS

A soil association is a landscape that has a distinctive proportional pattern of soils. It normally consists of one or more major soils and at least one minor soil, and it is named for the major soils. The soils in one association may occur in another, but in a different pattern. A map showing soil associations is useful to people who want a general idea of the soils in a survey area, who want to know the location of large tracts that are suitable for a certain kind of land use, or who want to compare different parts of this area. Following is a description of the soil association in the District.

SOILS OF THE FLOOD PLAINS

#1 Moderately sloping to steep, shallow and deep, well-drained soils of the flood plains.

SOILS OF THE SANDSTONE AND SHALE UPLANDS

#2 Moderately sloping to steep, shallow and deep, well-drained soils on the sandstone and shale uplands.

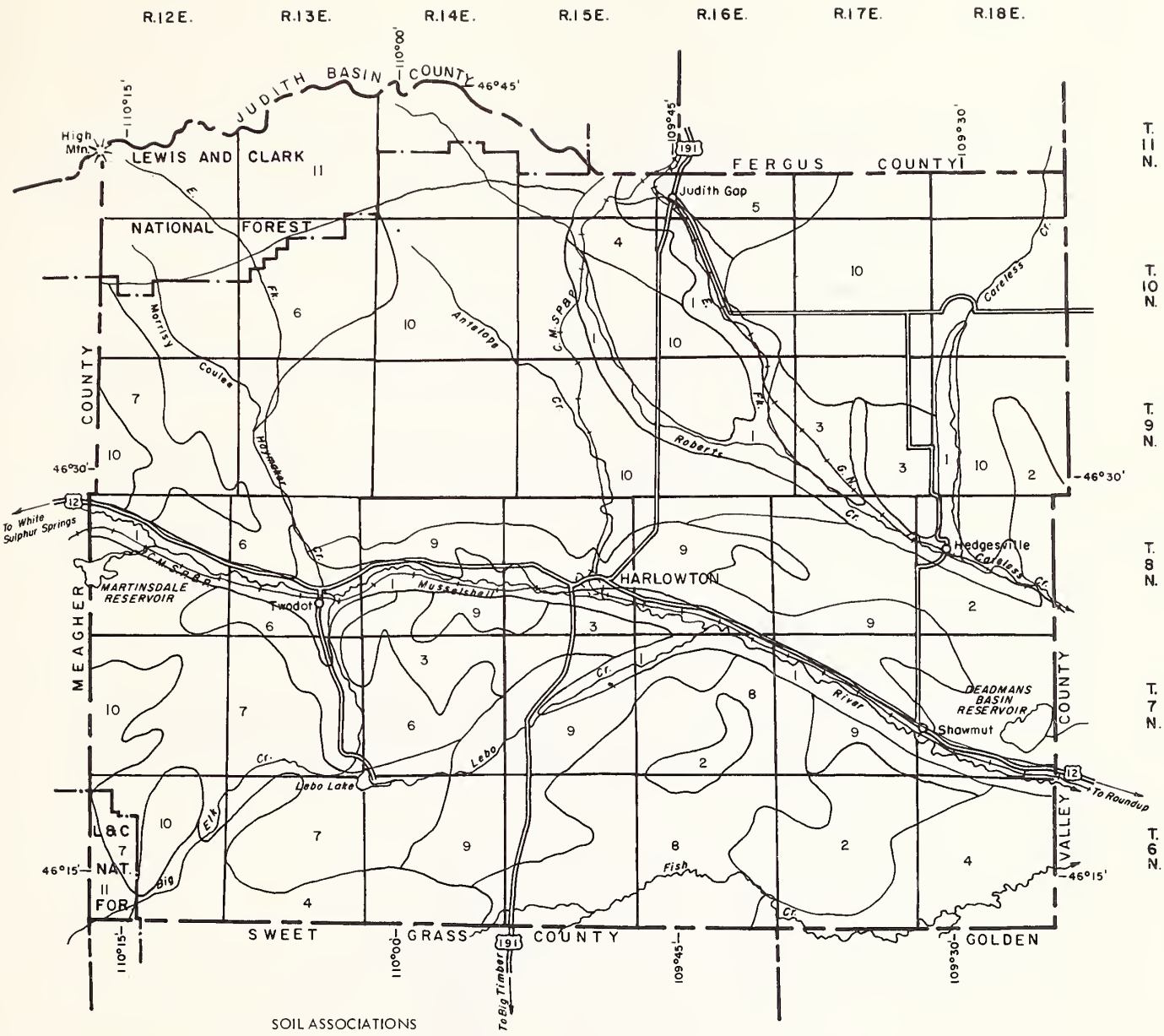
#3 Gently sloping to steep, shallow and deep, well-drained soils of the sandstone and shale uplands.

#4 Strongly sloping to very steep, moderatly deep and shallow, well-drained soils of the sandstone and shale uplands.

#5 Gently sloping to strongly sloping, moderatly deep and deep, well-drained soils of the sandstone and shale uplands.

#6 Nearly level to steep, shallow and deep, well-drained soils of the sandstone and shale uplands.

#7 Moderately sloping to steep, shallow to moderately deep, well-drained soils of the sandstone and shale uplands. (Soils in this association are similar to those in association #4 except that they are in an area having a shorter growing season.)



SOIL ASSOCIATIONS

SOILS OF THE FLOOD PLAINS

1	Nearly level to gently sloping, deep, well-drained soils on flood plains.

SOILS OF THE SANDSTONE AND SHALE UPLANDS

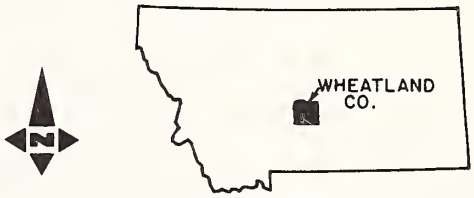
2	Moderately sloping to steep, shallow and deep, well-drained soils on the sandstone and shale uplands.
3	Gently sloping to steep, shallow and deep, well-drained soils of the sandstone and shale uplands.
4	Strongly sloping to very steep, shallow and moderately deep, well-drained soils of the sandstone and shale uplands.
5	Gently sloping to strongly sloping, moderately deep and deep, well-drained soils of the sandstone and shale uplands.
6	Nearly level to steep, shallow and deep, well-drained soils of the sandstone and shale uplands.
7	Moderately sloping to steep, shallow to moderately deep, well-drained soils of the shale and sandstone uplands. (Soils in this association are similar to those in association 4 except that they are in an area having a shorter growing season.)
8	Moderately sloping to steep, shallow and moderately deep, well-drained soils of the sandstone and shale uplands. (Soils in this association are similar to those in association number 7 except that they have lighter colored surface layers.)

SOILS OF THE HIGH TERRACES

9	Nearly level to strongly sloping, deep, well-drained soils of the high terraces.
10	Nearly level to steep, deep, well-drained soils of the high terraces. (Soils in this association are similar to those in association number 9 except that they have lighter colored surface layers.)

SOILS OF THE MOUNTAINS

11	Limestone and igneous rock outcrops and moderately steep to very steep, shallow and moderately deep, well-drained soils on the tops and on upper valley side slopes of the mountains.



LOCATION MAP

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.

GENERAL SOIL MAP

WHEATLAND COUNTY, MONTANA

JULY 1975

5 0 5 10 MILES

SCALE 1:500,000

U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE USDA-SCS-PORTLAND, OREG. 1975

M7-OL-23485-7

#8 Moderately sloping to steep, shallow and moderately deep, well-drained soils of the sandstone and shale uplands. (soils in this associaion are similar to those in association 7 except that they have lighter colored surface layers.)

SOILS OF THE HIGH TERRACES

#9 Nearly level to strongly sloping, deep, well-drained soils of the high terraces.

#10 Nearly level to steep, deep, well-drained soils of the high terraces. (Soils in this association are similar to those in association 9 except that they have lighter colored surface layers.)

SOILS OF THE MOUNTAINS

#11 Limestone and igneous rock outcrops and moderately steep to very steep, shallow and moderately deep, well-drained soils on the tops and on upper valley side slopes of the mountains.

"Is this the buried treasure grandpa left us?"

INCOME

Based on the poverty definition as used in the 1970 census report, eighty-eight or 12.6% of all families had incomes of less than the poverty level. One hundred twenty-nine or 18.5% had incomes less than 125% of poverty level.

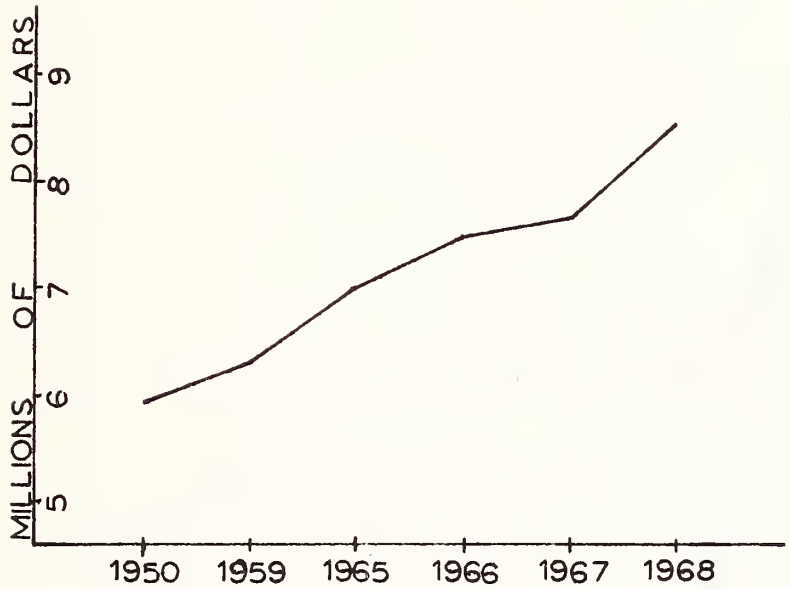
Family Income - 1969*		
	No.	Percent
Under $3,000.00	95	13.7
3,000 - 5,999	170	24.5
6,000 - 8,999	206	29.6
9,000 - 14,999	177	25.4
15,000 - 24,999	39	5.6
25,000 and over	9	1.3
	Total 696	100.0%

EMPLOYMENT Approximately 28% of the labor force is employed in agriculture and a large portion is engaged in service to agriculture. The approximate distribution of employment is shown in the following table.

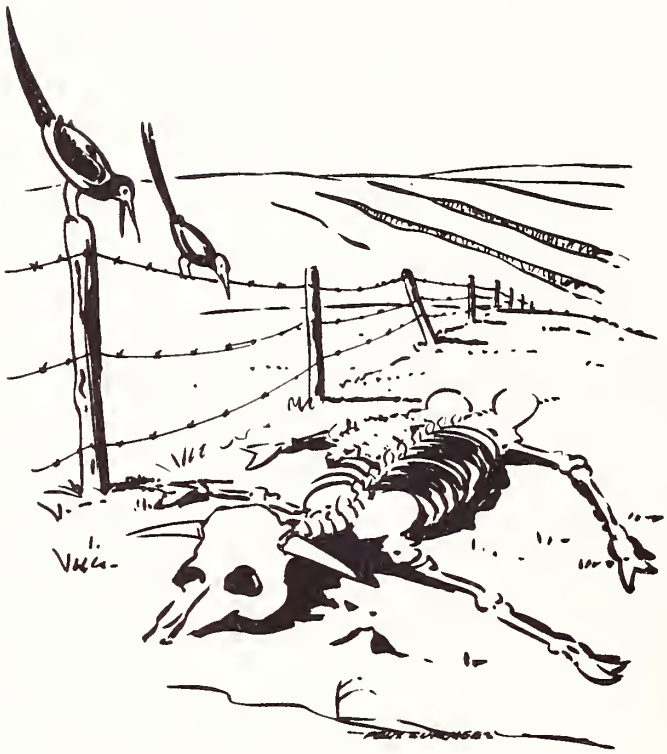
Employment by Industry Groups*	
Agriculture	308
Manufacturing	11
Transportation and Utility	129
Trade, Service, Finance	258
Federal, State and Local Government	200
Other	208
Total	1,102

* United States Bureau of Census (1970)

PERSONAL INCOME
TOTAL



PERSONAL INCOME
PER CAPITA



His boss said - " range conservation is for the birds ! "

LAND CAPABILITY CLASSIFICATION

The capability classification is a practical grouping of soils. Soils and climate are considered together as they influence use, management, and the kinds of crops that can be grown. The classification contains two general divisions: (1) Land suited for cultivation and other uses, (2) Land limited in use and not best suited for cultivation. Each of these broad divisions has four classes. The hazards and limitation in use increase as the class number increases. These show the prinicpal kinds of problems involved. The subclasses are: "e" for erosion, "w" for wetness, "s" for soil, and "c" for climate, short growing season or drouthy conditions.

LAND SUITED FOR CULTIVATION AND OTHER USES

Class 1 Soils in Class 1 have few or no limitations or hazards. They may be used safely for growing a wide variety of cultivated crops, for pasture, range, woodland, and wildlife.

Class 2 Soils in Class 2 have few limitations or hazards. Simple conservation practices are needed when cultivated. They are suited for most of the cultivated crops commonly grown in the area, for pasture, range, woodland, and wildlife.

Class 3 Soils in Class 3 have more limitations and hazards than those in Class 2. They require more difficult or complex conservation practices when cultivated. The are suited for growing fewer cultivated crops than soils in Class 2, and for pasture, range, woodland, and wildlife.

Class 4 Soils in Class 4 have greater limitations and hazards than Class 3. Still more difficult complex measures are needed when cultivated. They are suited for growing only a few cultivated crops, and for pasture, range, woodland, and wildlife.

LAND LIMITED IN USE - GENERALLY NOT SUITED FOR CULTIVATION

Class 5 Soils in Class 5 have little or no erosion hazard but have other limitations that prevent normal tillage for cultivation crops. They are suited for pasture, range, woodland, and wildlife.

Class 6 Soils in Class 6 have severe limitations or hazards that make them unsuited for most cultivation. They are suited generally for pasture, range, woodland, and wildlife.

Class 7 Soils in Class 7 have very severe limitations or hazards that make them generally unsuited for cultivation. They are suited for range, woodland and wildlife.

Class 8 Soils and land forms in Class 8 have limitations and hazards that prevent their use for cultivation crops, pasture, range, or woodland. They may be used for recreation, wildlife and water supply.

ACREAGE BY LAND CAPABILITY, CLASS, & SUB-CLASS*
PRIVATE AND STATE OWNER LANDS **

	Cropland	Rangeland	Pasture	Woodland	Other	% By Class	Total
CLASS 2e	1,150	1,904	0	0	0		3,054
2w	8,500	9,419	3,010	12	10		20,951
2s	5,317	0	80	0	0		5,397
2c	9,605	14,880	9,491	0	71		34,047
TOTAL	24,572	26,203	12,581	12	81	8%	63,449
CLASS 3e	7,317	61,964	564	25	269		70,139
3w	0	5,788	2,018	0	499		8,305
3s	8,769	22,926	515	37	0		32,247
3c	0	10,409	1,110	455	281		12,255
TOTAL	16,086	101,087	4,207	517	1,049	15%	122,946
CLASS 4e	3,071	105,730	75	2,200	125		111,201
4w	2,432	2,380	0	0	0		4,812
4s	18,334	50,024	10,820	0	374		79,552
4c	3,991	9,747	1,514	0	0		15,252
TOTAL	27,828	167,881	12,409	2,200	499	25%	210,817
CLASS 6e	550	198,873	0	2,825	259		202,507
6w	0	32,673	0	0	0		32,673
6s	4,810	121,127	676	3,114	442		130,169
TOTAL	5,360	352,673	676	5,939	711	44%	365,359
CLASS 7s	0	54,309	0	313	249		54,871
TOTAL	0	54,309	0	313	249	6%	54,871
CLASS 8w	0	113	0	0	0		113
8s	0	14,320	0	626	0		14,946
TOTAL	0	14,433	0	626	0	2%	15,059
TOTAL ALL CLASSES	73,846	716,586	29,873	9,607	2,589	100%	832,501

LAND OWNERSHIP

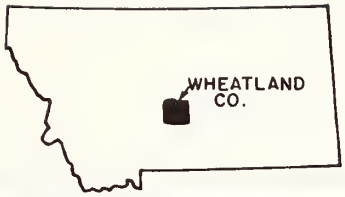
The land ownership pattern of the District is shown on the land ownership map. The approximate ownership of this land is as follows:

	ACRES
Private	759,723
State of Montana	72,778
Federal Government	70,282

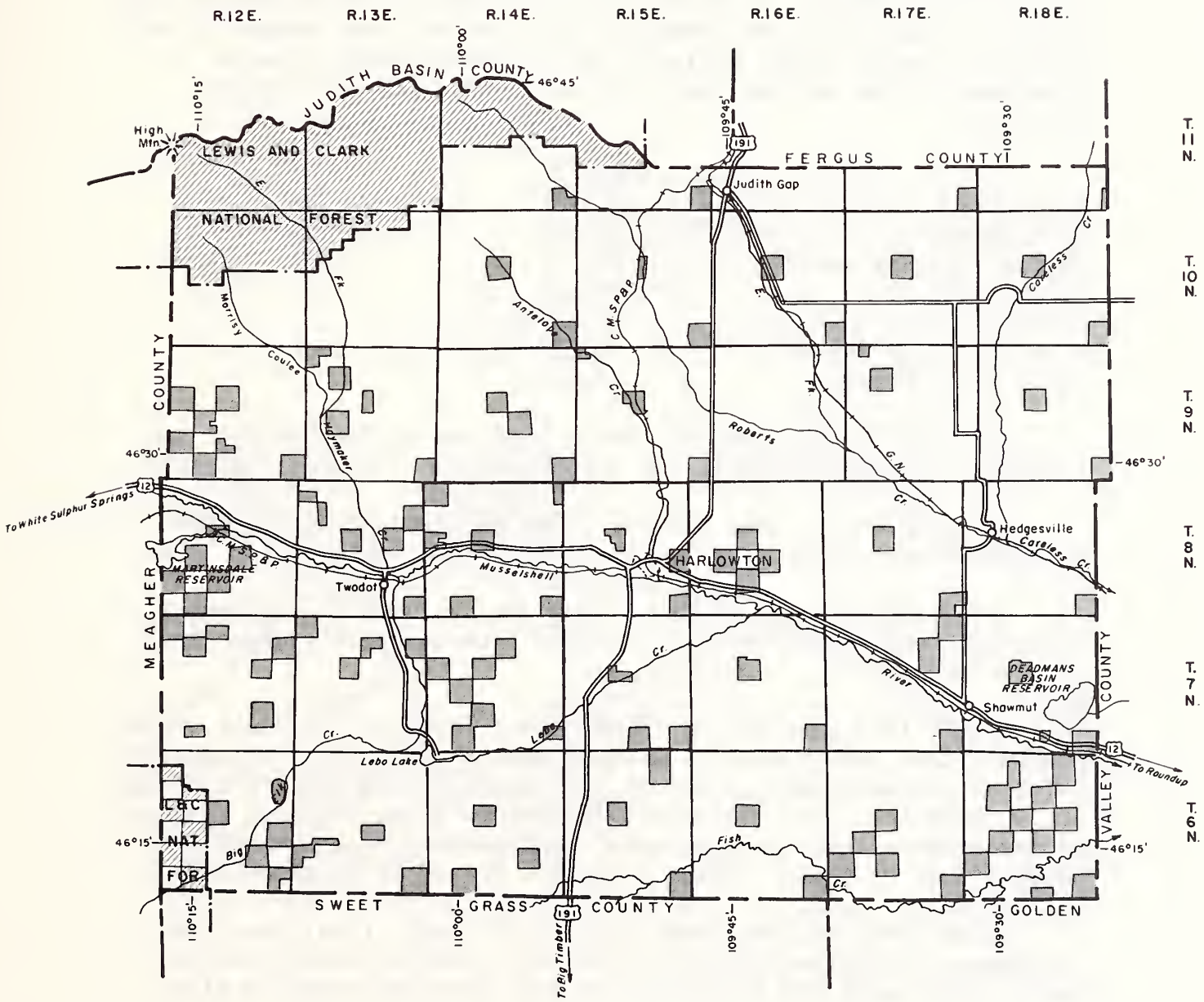
Private ownership accounts for about 84% of the land in the District. Railroad land comprises approximately 1% of the total land area. There are numerous non-resident land owners. These lands are usually leased to local operators. Numerous small ownership tracts occur in the area adjacent to Deadman's Basin.

Federal land accounts for about 8% of the land area. It consists primarily of Forest Service Land located in the Little Belt Mountains in the northwestern portion of the District, and the Crazy Mountains in the Southwest corner of the District. There are a few small tracts of B.L.M. land scattered throughout the District.

State of Montana land accounts for about 8% of the land area in the District. These lands are scattered throughout the District.



LOCATION MAP



LAND OWNERSHIP

State Land

U.S. Forest Service

Private

LAND OWNERSHIP

WHEATLAND COUNTY, MONTANA

JULY 1975

5 0 5 10 MILES

SCALE 1:500,000

LAND USE

Around the turn of the century all of the land in the District was used for livestock grazing. Homesteaders settled in the area in the early 1900's and started dryland farming operations. Presently approximately 99% of the land is used for the production of crops and livestock. No major land use change occurred before 1970. However, since 1970 considerable grass land has been broken up and put into growing cereal grains. The following table shows a breakdown of the various land uses taken from the 1970 Montana Data Book.

	No. Ac.	%
Rangeland	716,586	79
Dry Cropland	73,846	8
Pasture and Hayland	29,873	3
Forest Land	79,889	9
Other Land	2,589	
Urban Built-up Areas	5,837	2
Small Water Areas	1,460	

Rangeland is the largest single land use in the District and provides the primary source for supporting the livestock industry.

Dry cropland is used primarily for the production of cereal grains produced under an alternate crop-fallow system.

Hay and pasture consists of tame grasses used to supplement livestock feed and forage and are used interchangeable depending on the need.

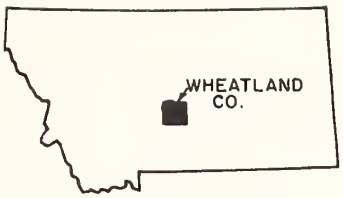
Forest land consists of timber areas found on the south slopes of the Little Belt Mountains west of Judith Gap with a few sections lying at the southwest corner of the county in the foothills of the Crazy Mountains. The timberland in both of these areas is composed of uncommercial and nonmarketable saw timber of minor amounts and dense stands of poles. These areas are grazed by livestock.

Other land includes farmsteads, farm roads, rural non-farm residences, investment tracts, churches, schools, cemeteries, and small stock ponds and reservoirs of less than two acres in size.

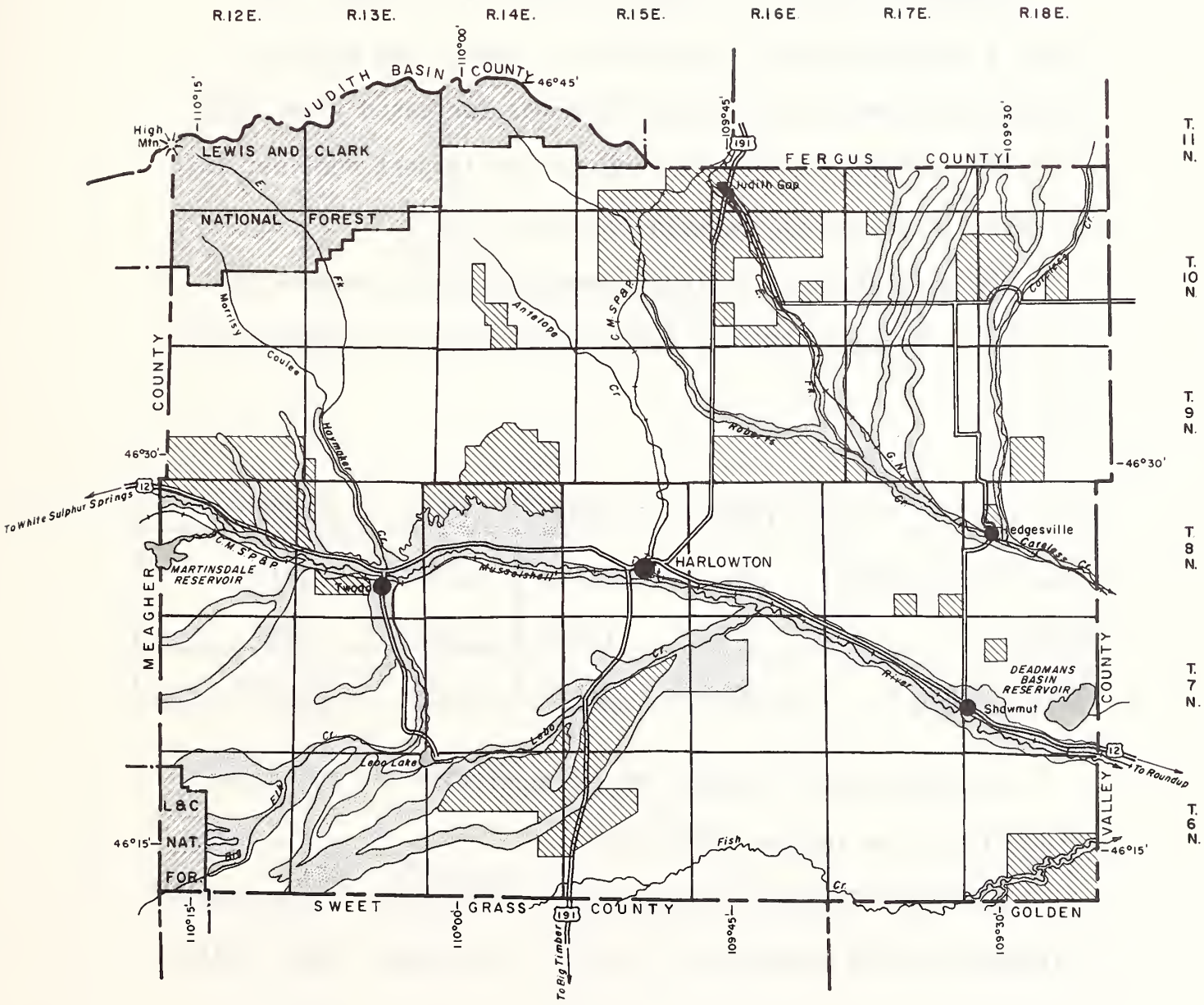
Urban built-up areas in the District includes towns and other built-up areas of more than 10 acres in size such as highways, roads, and industrial sites.

Small water areas are ponds, reservoirs and lakes that are two to forty acres in size.

* This is Private land only. No federal land is included in these figures.



LOCATION MAP



LAND USE

- 90% Irrigated Land
- 90% Dry Cropland
- 90% Range or Pastureland
- 90% Grazed Woodland
- Small Water Areas
- Urban Buildup

LAND USE

WHEATLAND COUNTY, MONTANA

JULY 1975

5 0 5 10 MILES

SCALE 1:500,000

POPULATION

Wheatland County, like many counties in Montana, has faced a steady decline in population. During the period between 1940 and 1970 the population has decreased from 3,286 to 2,529. This is a decline of 23%. The largest decline, 15% occurred in the period between 1960 and 1970.

The population of Harlowton remained stable between 1950 and 1960. Between 1960 and 1970, it decreased by approximately 21%.

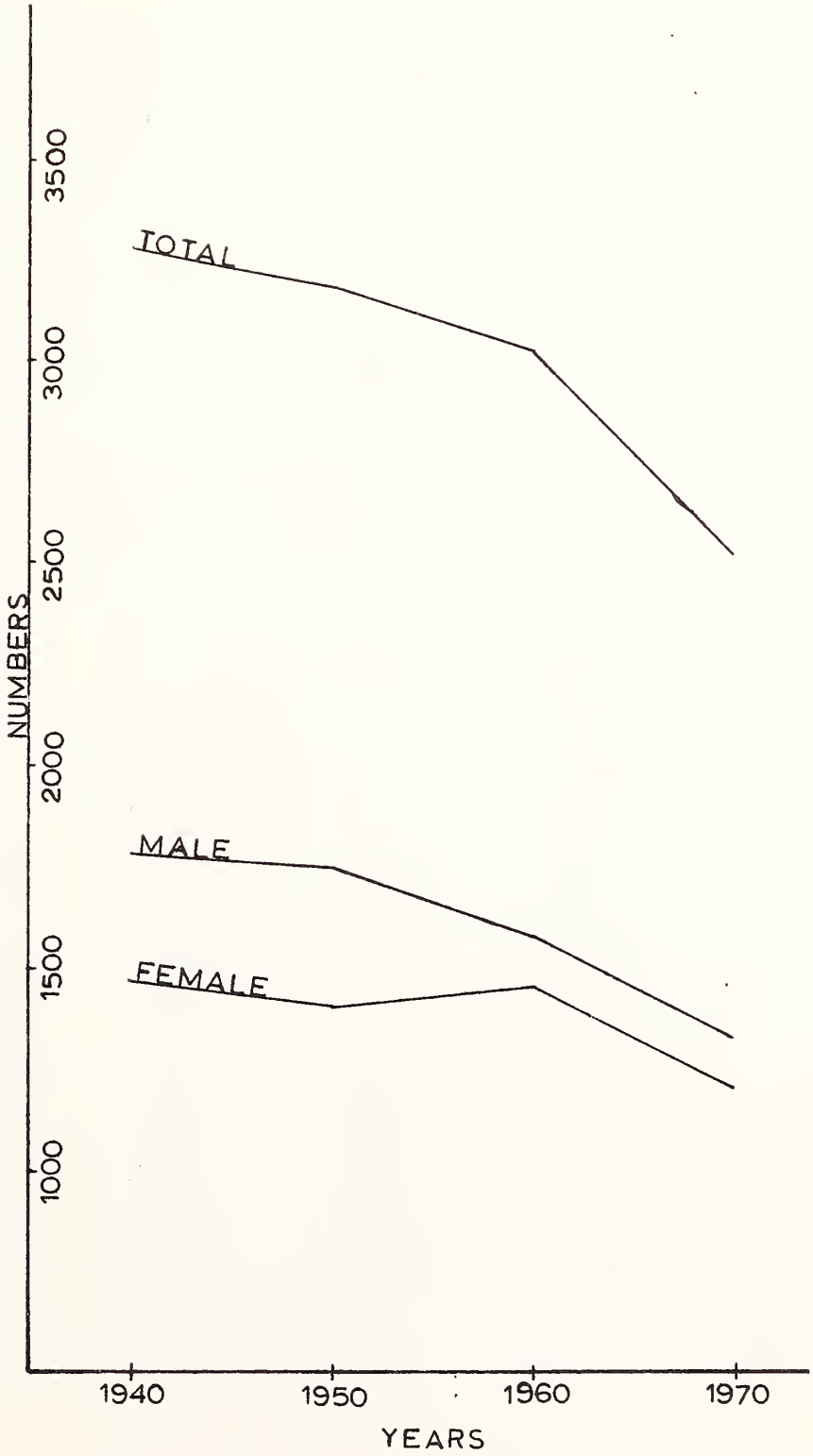
	1940	1950	1960	1970
Town of Harlowton	*	1,733	1,734	1,375
Rural	*	1,454	1,292	1,154
COUNTY TOTAL	3,286	3,187	3,026	2,529

It appears that the decline in population did not occur specifically in any one age group.

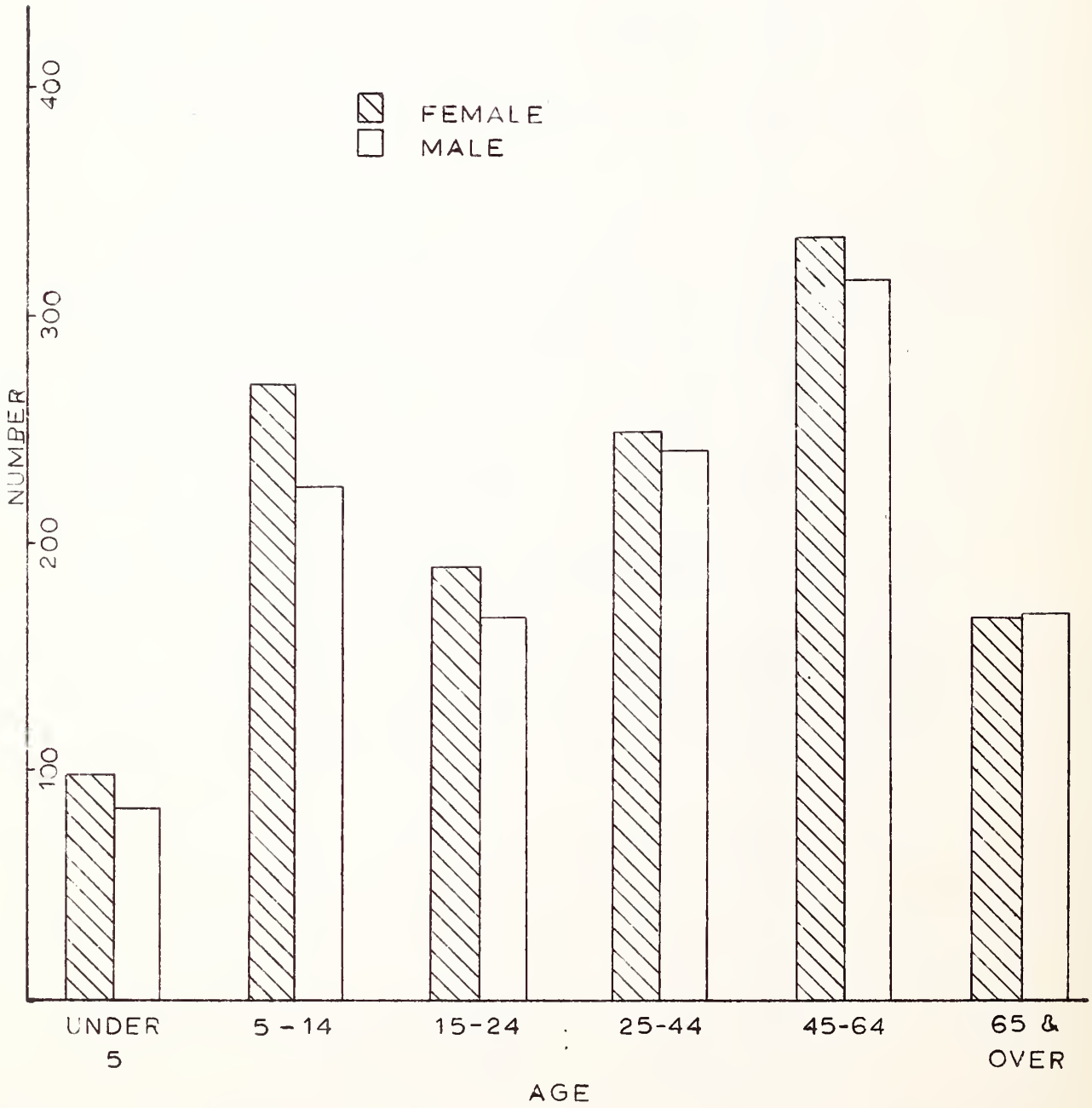
Wheatland County is classed as a rural county. The town of Harlowton with a population of 1,375 is the major trade center.

* Data is not available.

POPULATION

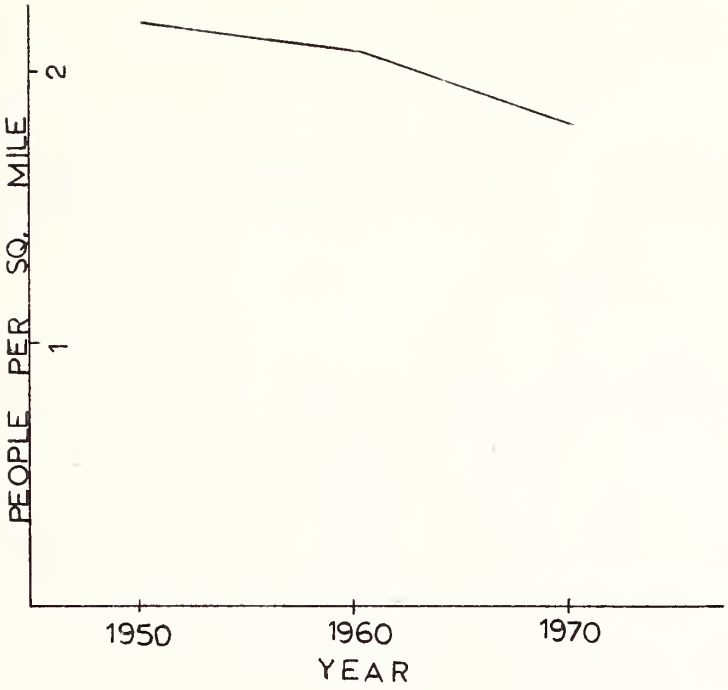

3500
3000
2500
2000
1500
1000
NUMBERS
TOTAL
MALE
FEMALE
1940
1950
1960
1970
YEARS

POPULATION
by AGE & SEX

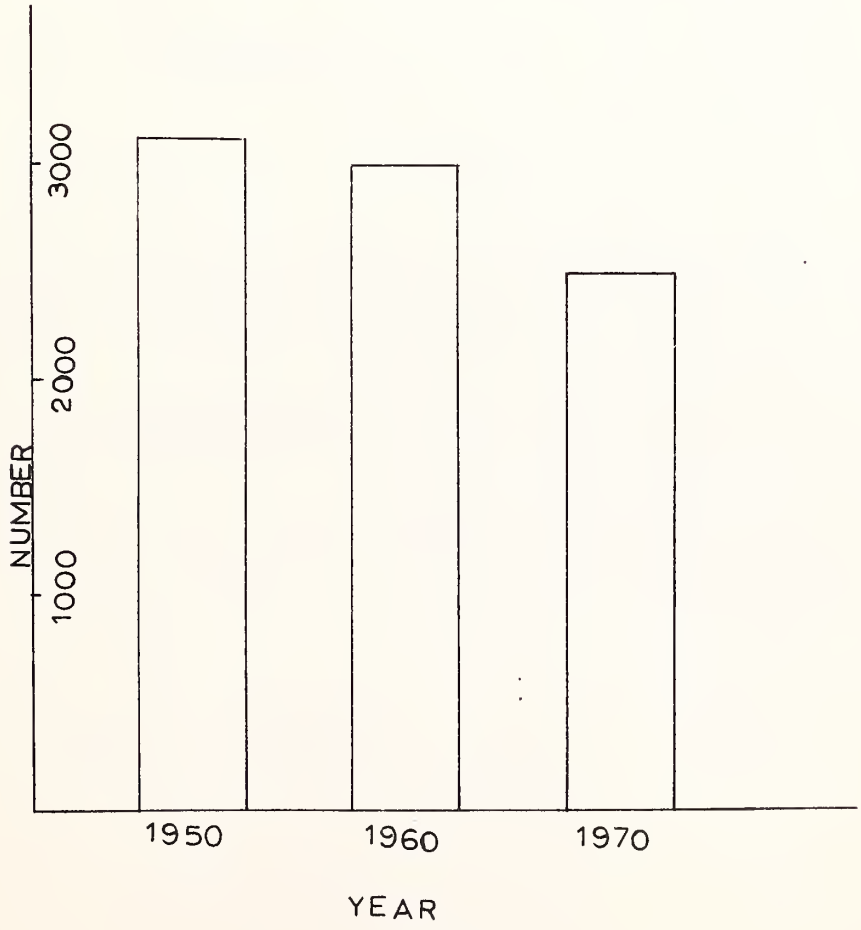


United States Bureau of Census (1970)

POPULATION DENSITY



POPULATION



PUBLIC FACILITIES

There are three governmental units within the boundaries of the District. A board of County Commissioners governs the functions of the county. The county courthouse at Harlowton is the center for county office. A modern Sheriff's office and county jail was constructed recently. The towns of Harlowton and Judith Gap are governed by a mayor-council type of government.

The District is served by two high schools and four elementary schools. The 1974-75 school enrollment is approximately 218 high school students and 370 elementary students.

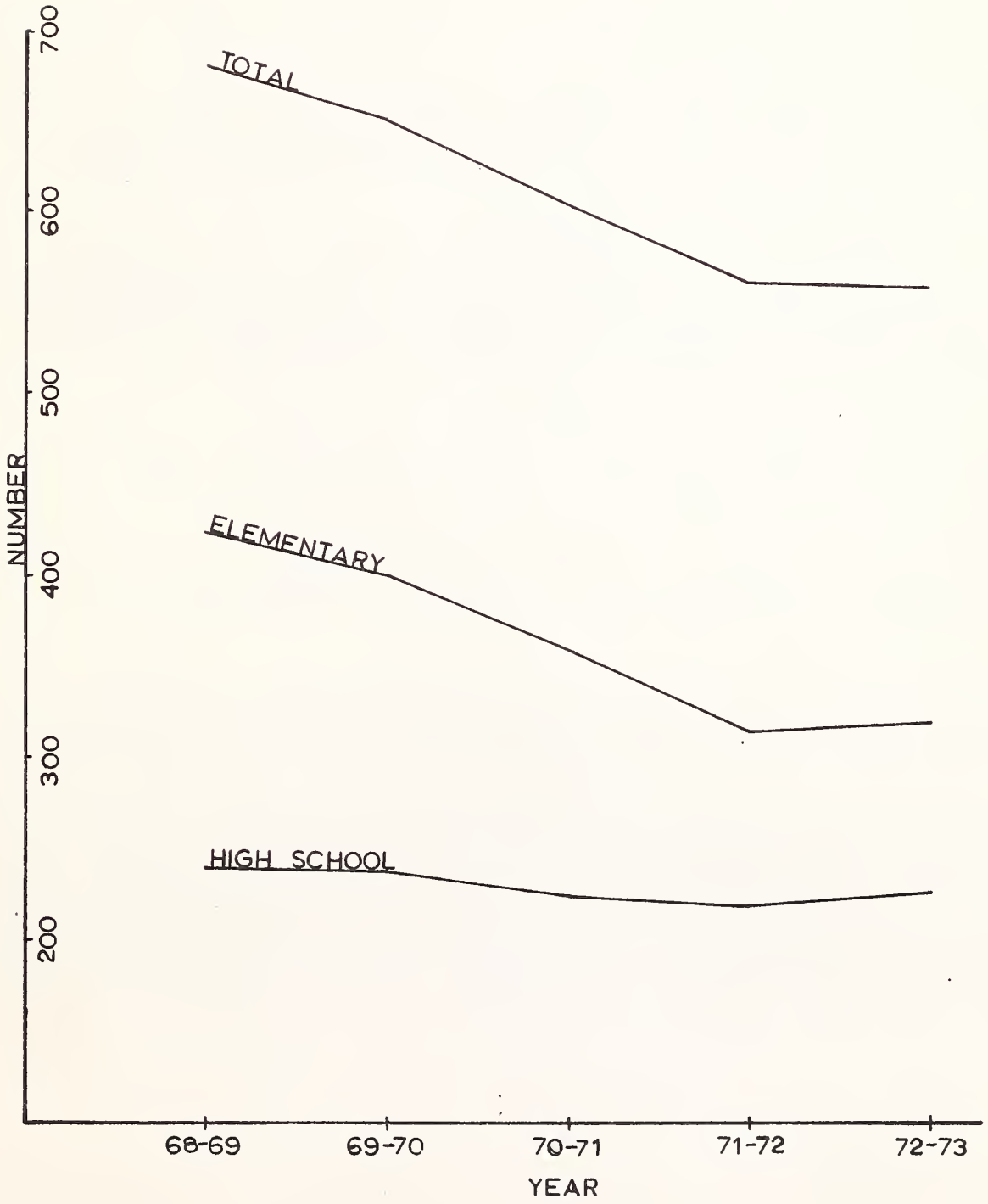
There is a hospital and modern nursing home at Harlowton with two resident physicians. A dentist office and a optometrist as well as two veterinarians are also located at Harlowton.

Montana Power Co. supplies power and natural gas to Harlowton and power to rural areas.

The Mountain States Telephone and Telegraph Company supplies telephone service to nearly all residents throughout the county.

No radio or television stations are located in the District.

PUBLIC SCHOOL ENROLLMENT



MINERAL DEPOSITS

Large sand and gravel deposits occur in areas north of Harlowton, in the northeastern portion of the county and in areas south of Harlowton. These sand and gravel deposits have a potential for commercial sale.

Clay suitable for brick manufacture has been dug from Kootenai Formations simular to those found in the northwestern area of the county. Commercial deposits of bentonite have been mined in Montana in areas simular to the Bearpaw shale outcrops found in the eastern and southern parts of the county. However, no commercial mining of clay or bentonite has ever been done.

As of January 1975 thirty-six (36) holes had been drilled for exploration of gas and oil. One of these holes was shown as a gas well, and all of the other holes were dry.

Other than the above there are no known mineral deposits.

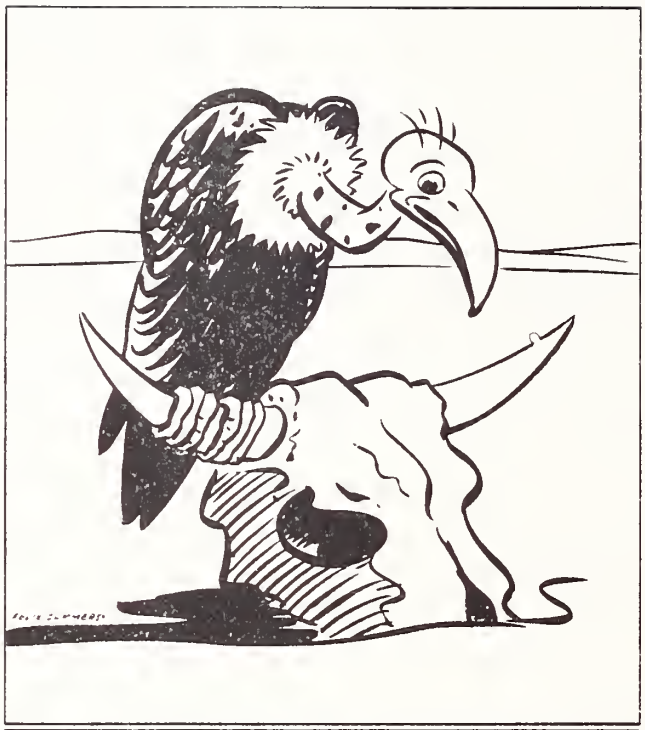
PASTURE

Pasture land comprises approximately 3.5% of the private agricultural land in the District or about 29,800 acres.

This land consists of poor condition rangeland that has been reseeded to tame grasses or marginal cropland that has been seeded to permanent vegetative cover.

Predominant grasses used in pastures in the District include Creasted Wheatgrass, Intermediate Wheatgrass, and Pubescent Wheatgrass.

Eighty-one (81) percent of the pasture is non-irrigated.



NO GRASS - NO MEAT

RANGELAND AND PASTURE

Rangeland is made up of soils of which the plant cover is a combination of native grasses, forbs and shrubs. These lands provide forage for livestock, wildlife habitat, protection of soil from erosion, and watershed protection. Rangeland also provides recreational opportunities, natural beauty, and areas for future development and solitude. There are approximately 796,400 acres of rangeland in the District accounting for 88% of the land use. The largest segment, 84%, is privately owned with sixteen percent being equally divided between state and federal governments. The majority of the federally owned land is the Lewis & Clark National Forest.

Rangeland vegetation of the lower benchlands and foothills is typically of the short grass species whereas the tall grasses and shrubs predominate on the higher benches and foothills. Greasewood, salt sage and salt tolerant grass commonly occur on saline lands. Dense stands of cottonwood, willows, buckbrush, and other brushes are frequently found along the major streams and drainages within the District. These areas provide good protection for livestock during peroids of bad weather.

Range condition is the present composition of vegetation of a range site in relation to the potential plant community for that site. Range condition studies show that approximately 55% of the range is in good to excellent condition and that 45% is in fair to poor condition. Heavy use over a period of

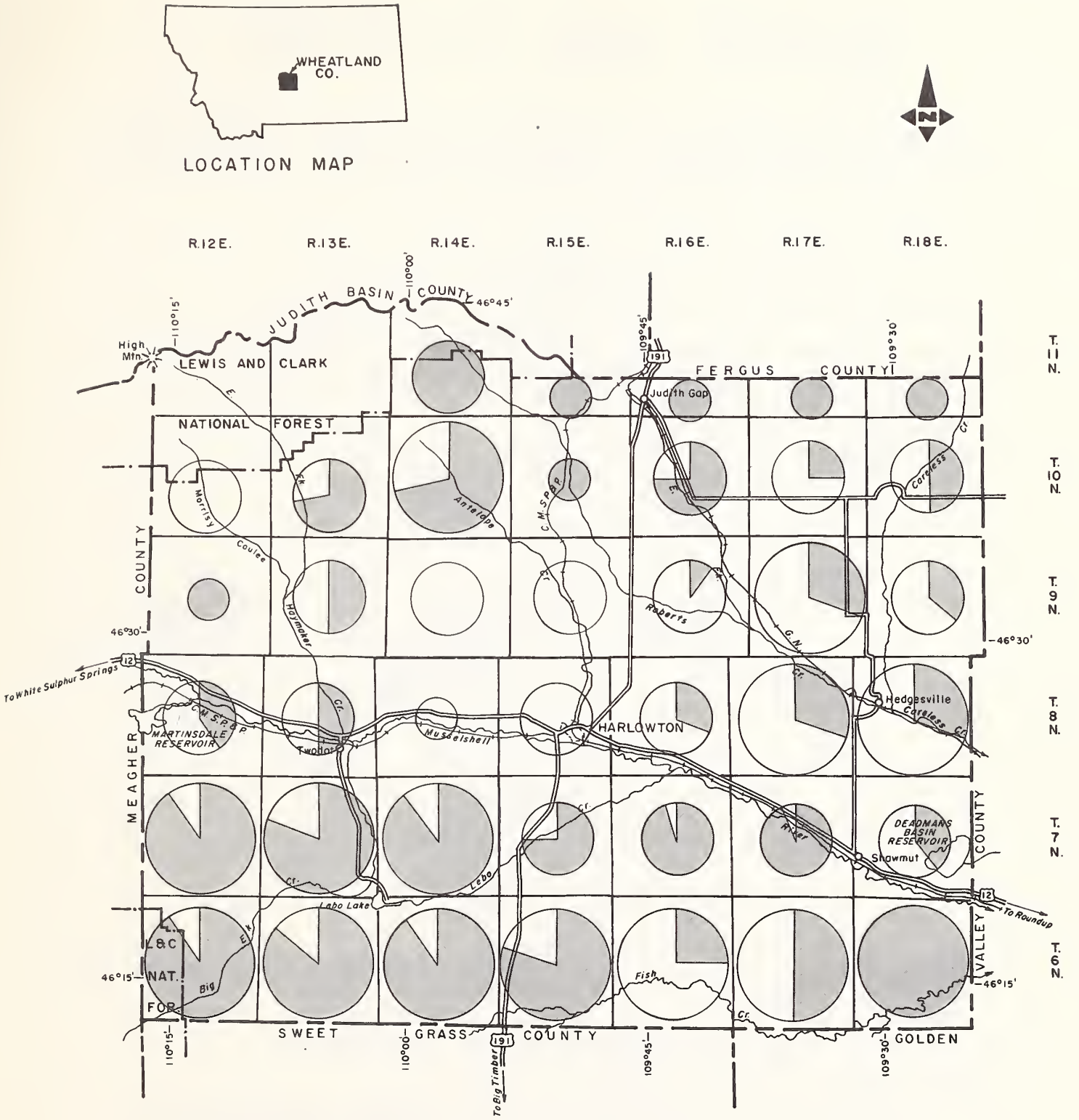
years reduces the vigor of the plants and may result in their elimination. Grazing animals are selective and grazing pressure is heaviest on the most palatable plants.

It is estimated that in its present condition the rangeland will provide approximately 145,300 animal unit months of grazing. With proper range improvement practices to improve range condition, it is estimated that this figure could increase to more than 200,000 animal unit months of grazing.

The raising of cattle and sheep are the main livestock enterprises. As shown in the following table, cattle numbers have increased since 1968[1]. However, sheep numbers have declined.

	1974	1972	1970	1968
Cattle and Calves	41,000	43,900	34,000	34,000
Sheep and Lambs	19,000	28,800	34,000	38,000
Total	60,000	72,700	68,000	72,000

[1] Montana Agricultural Statistics



RANGELAND RESOURCE

County Wide

Poor to Fair

Good to Excellent

APPROXIMATE ACRES OF RANGELAND PER TOWNSHIP

20,000 to 25,000

10,000 to 20,000

1,500 to 10,000

RANGELAND RESOURCE

WHEATLAND COUNTY, MONTANA

JULY 1975

5 0 5 10 MILES

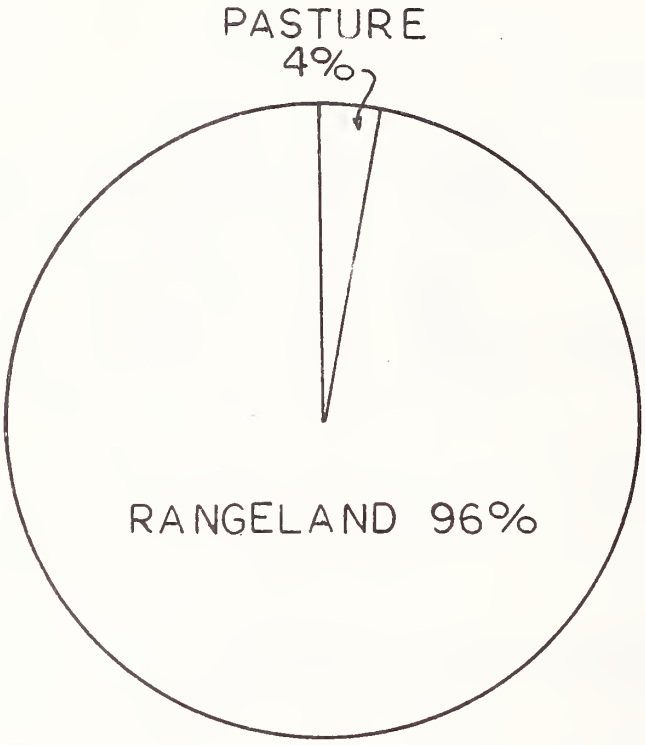
SCALE 1:500,000

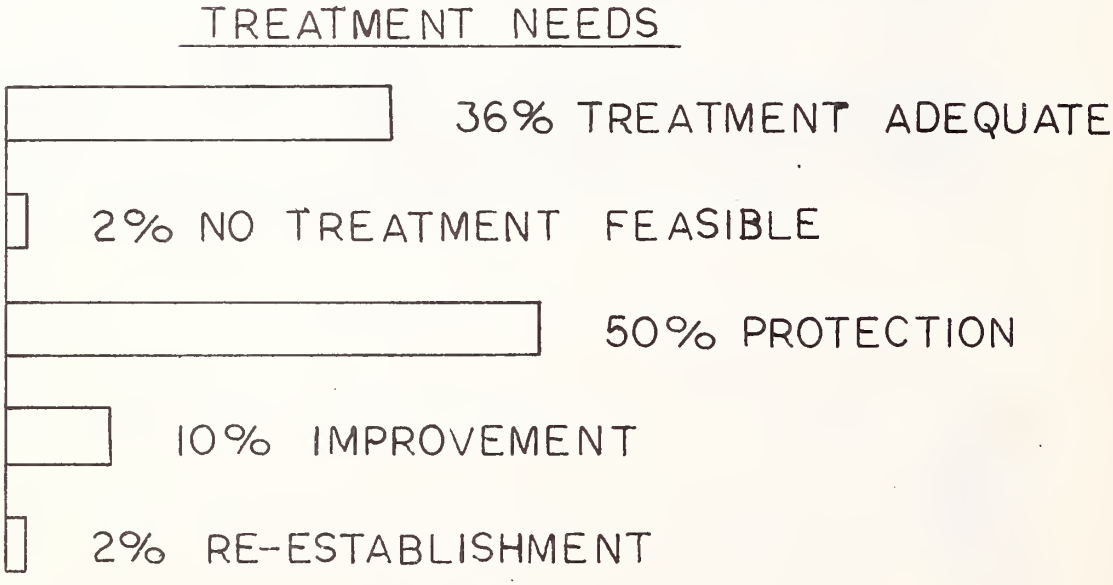
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE USDA-SCS-PORTLAND, OREG. 1975

M7-OL-23485-3

RANGE AND PASTURE

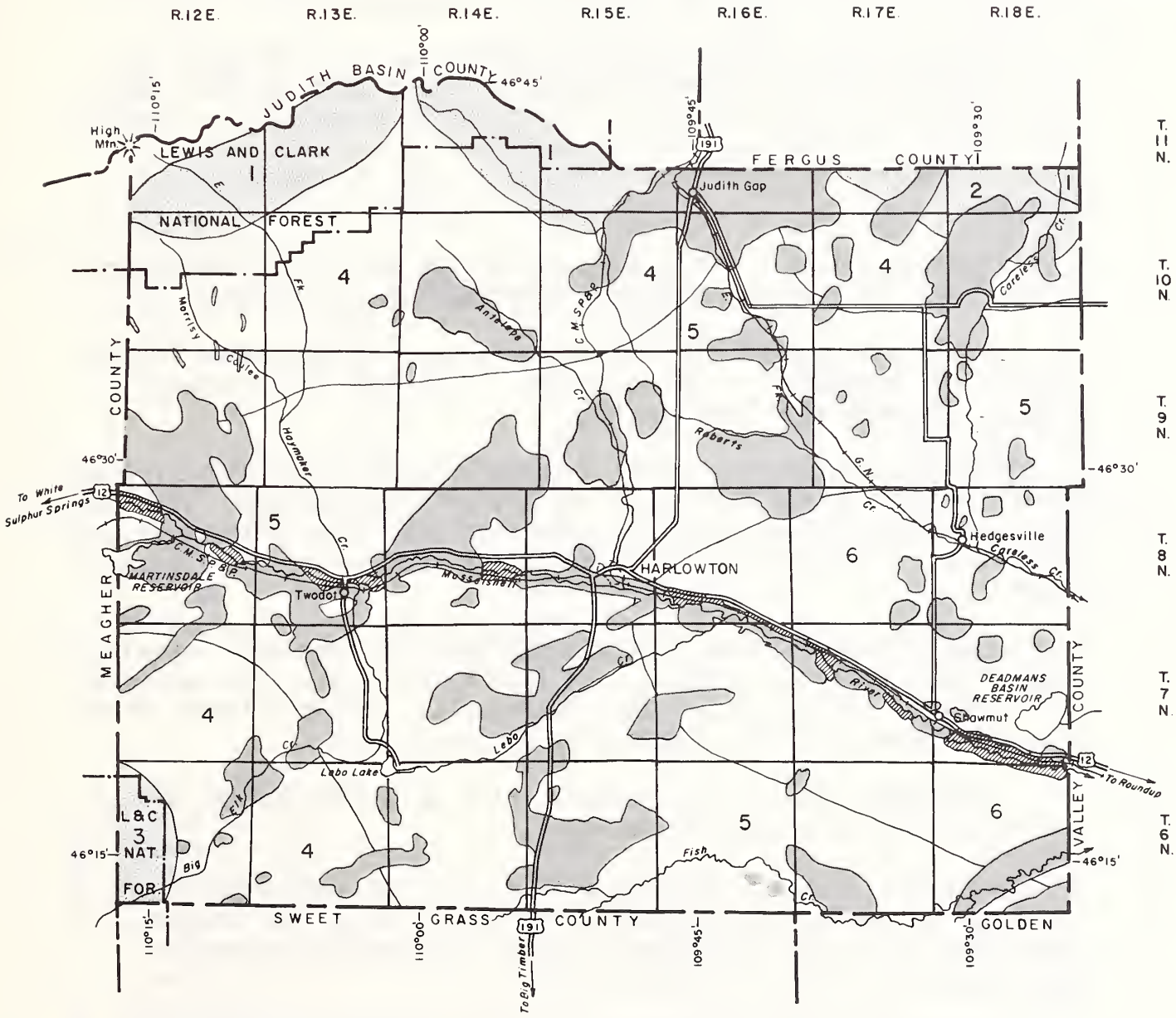
CONSERVATION TREATMENT NEEDS





Source: 1967 Conservation Needs Inventory - Wheatland County

LOCATION MAP



EXISTING VEGETATIVE TYPES

- 1 Douglas Fir
- 2 Eastern Ponderosa Pine
- 3 Lodgepole Pine
- 4 Bluebunch Wheatgrass-Fescue
- 5 Western Wheatgrass-Needle & Thread Green Needlegrass
- 6 Western Wheatgrass-Needle & Thread Grama
- Cottonwood-Willow
- Agricultural

EXISTING VEGETATIVE TYPES

WHEATLAND COUNTY, MONTANA

JULY 1975

5 0 5 10 MILES

SCALE 1:500,000

U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE USDA SCS-PORTLAND, OREG 1978

M7-OL-23485-8

RECREATION AND HISTORIC AREAS

The Upper Musselshell Conservation District lies between the Little Belt and Snowy Mountains to the north, the Castle mountains to the west, the Crazy mountains to the southwest and the Porcupine Butte and Cayuse Hills to the south. The Musselshell River runs diagonally from west to east through the county being fed along its route by many tributaries originating in the mountains.

Only occasional trappers and travelers came into the area until gold was discovered in central Montana in about 1879 to 1800. Military forts were constructed to protect the gold seekers from marauding Indians. In the early 1800's cattlemen from Texas and Kansas and stock companies established ranches in what is now Wheatland County.

With the coming of the railroads and the passing of the Desert Act of 1913 the area was opened to homesteads.

Severe droughts of the 20's and 30's and the depression caused most of the homesteads to be abandoned. Generally the abandoned land was incorporated into ranches.

Big game hunting and sports fishing provide the greatest recreational attraction for both local and out of state hunters. Elk, Mule, Whitetail deer and antelope are found from the river bottoms to the mountains. The Black bear is found in the surrounding mountains and foothills.

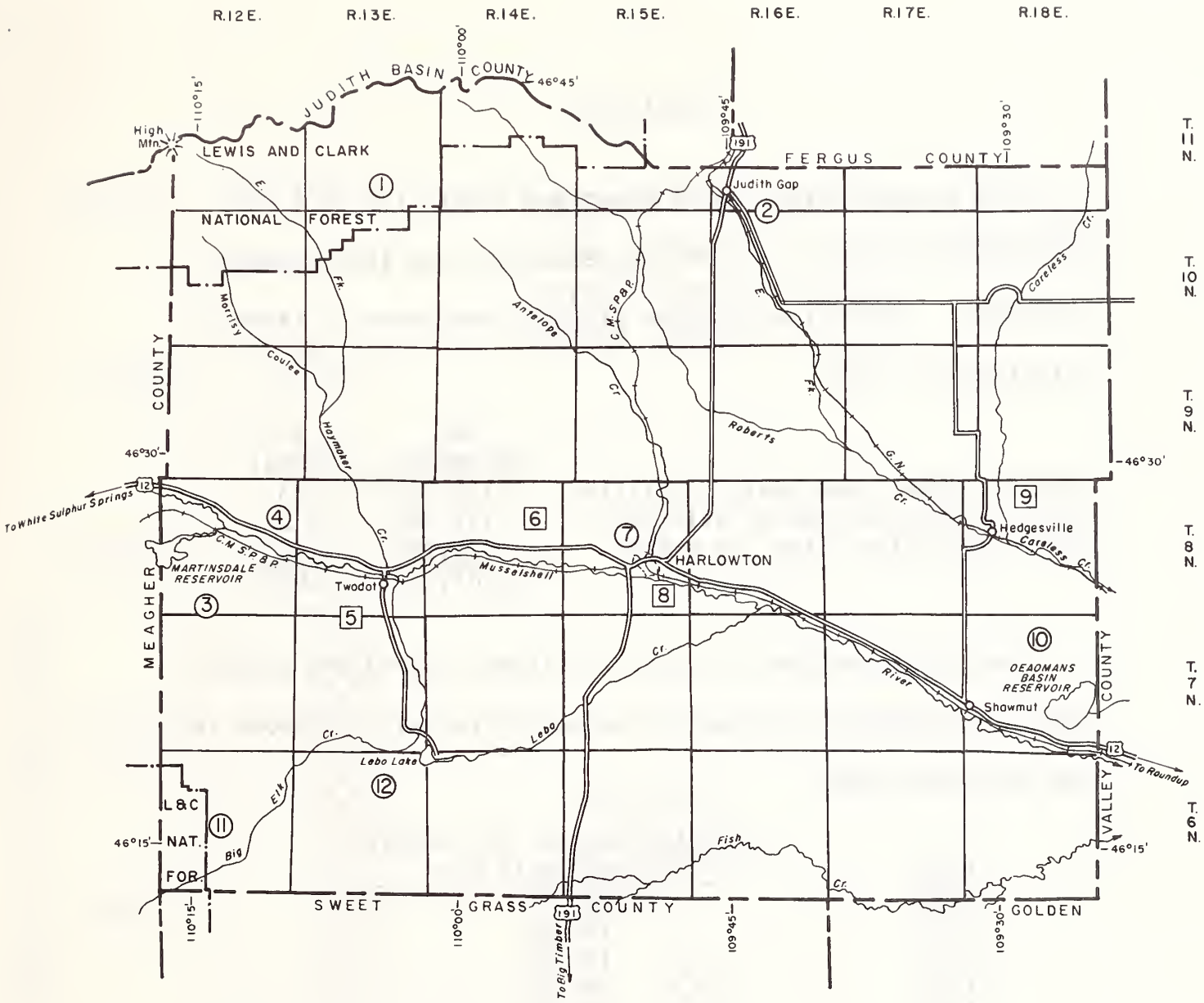
Deadman's Basin, Lebo Lake, and Martinsdale Reservoir as well as some private ponds are stocked with fish by the State Fish and Game Commission as well as by private individuals. The Musselshell River also offers an excellent opportunity to the angler.

Upland game birds such as ducks, ring necked pheasants, grouse and hungarian partridges are abundant.

Deadman's Basin is equipped with a boat ramp and water skiers are numerous during the warm summer months. Picnic and camping facilities are found at Deadman's Basin, Martinsdale Reservoir, Lebo Lake, and Selkirk Fishing access.

Recreation facilities found in or near the town of Harlowton include camping areas, country club, rodeo and fair grounds, and swimming pool.

Additional information on recreation in the area can be found in the report "An Appraisal of Potential Outdoor Recreational Developments in Wheatland County, Montana" prepared by the Wheatland County Technical Action Panel.



RECREATIONAL SITES

1. Little Belt Mountains
2. Judith Gap Picnic Area
3. Martinsdale Reservoir
4. Selkirk Fishing Access
7. Harlowton
   - Chief Joseph Camp Ground
   - Country Club
   - Swimming Pool
10. Deadmans Basin
11. Crazy Mountains
12. Lebo Lake

HISTORICAL SITES

5. Two Dot (Privately Owned)
6. Crazy Mountain Historical Marker
8. Chief Joseph's Camp
9. Hedgesville (Privately Owned)

LOCATION MAP

RECREATION AND HISTORICAL SITES

WHEATLAND COUNTY, MONTANA

JULY 1975

5 0 5 10 MILES

SCALE 1:500,000

U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE USDA-SCS-PORTLAND, OREG 1975

M7-OL-23485-12

TAXATION

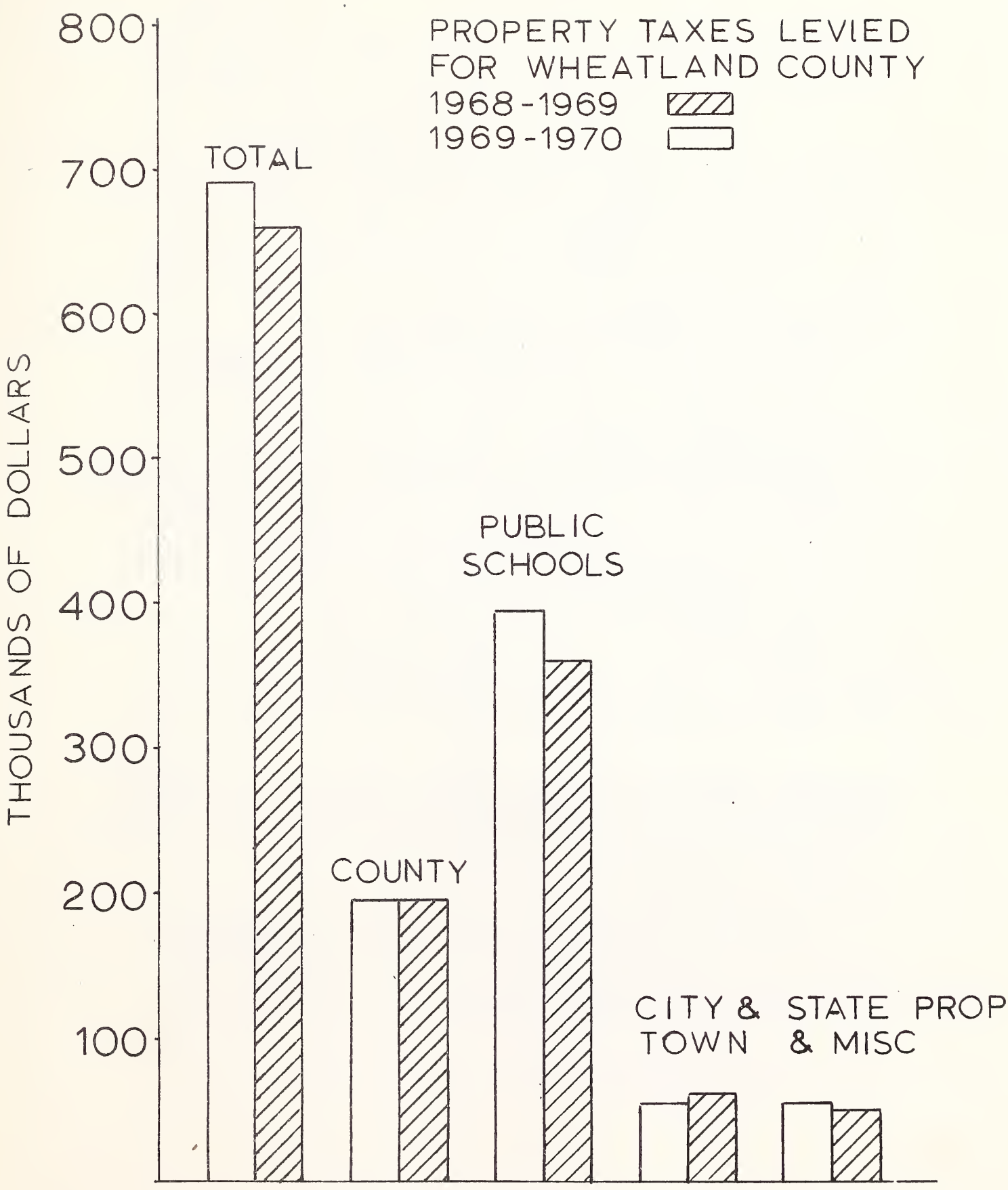
The taxable valuation of Wheatland County for 1974 was $5,287,050.00. This is a 22% increase over the 1964 taxable valuation. The following table gives a break down of taxable valuation for 1974:

	Tax Valuation	% Total
Property other than public utilities	4,179,193.	73
Local property of public utilities	137,703	3
Public utilities alloc. by state	970,154	18
	5,287,050.	100%

The total average mill levy for state, county and schools shows an increase of 3% during the past five years as shown in the following table:

YEAR	State, County, and Schools Average Mill Levy
1970	157.47
1971	164.23
1972	161.55
1973	186.76
1974	162.75

The 1974 taxable value for all agricultural land and improvements was $1,288,193.00 representing 24% of the total county valuation. The average taxable value of all agricultural land in the District is $4.32/acre.


PROPERTY TAXES LEVIED
FOR WHEATLAND COUNTY
1968-1969
1969-1970
THOUSANDS OF DOLLARS
800
700
600
500
400
300
200
100
TOTAL
COUNTY
PUBLIC SCHOOLS
CITY & TOWN
STATE PROP & MISC

TRANSPORTATION AND MARKETING

TRANSPORTATION The District is served by two federal highways one secondary state highway and county roads. U.S. Highway 12, traversing the county from east to west through the center, serves the communities of Shawmut, Harlowton, and Two Dot. U.S. Highway 191 extends north and south and serves the community of Judith Gap. Daily bus passenger service is available from Harlowton connecting Billings and Helena.

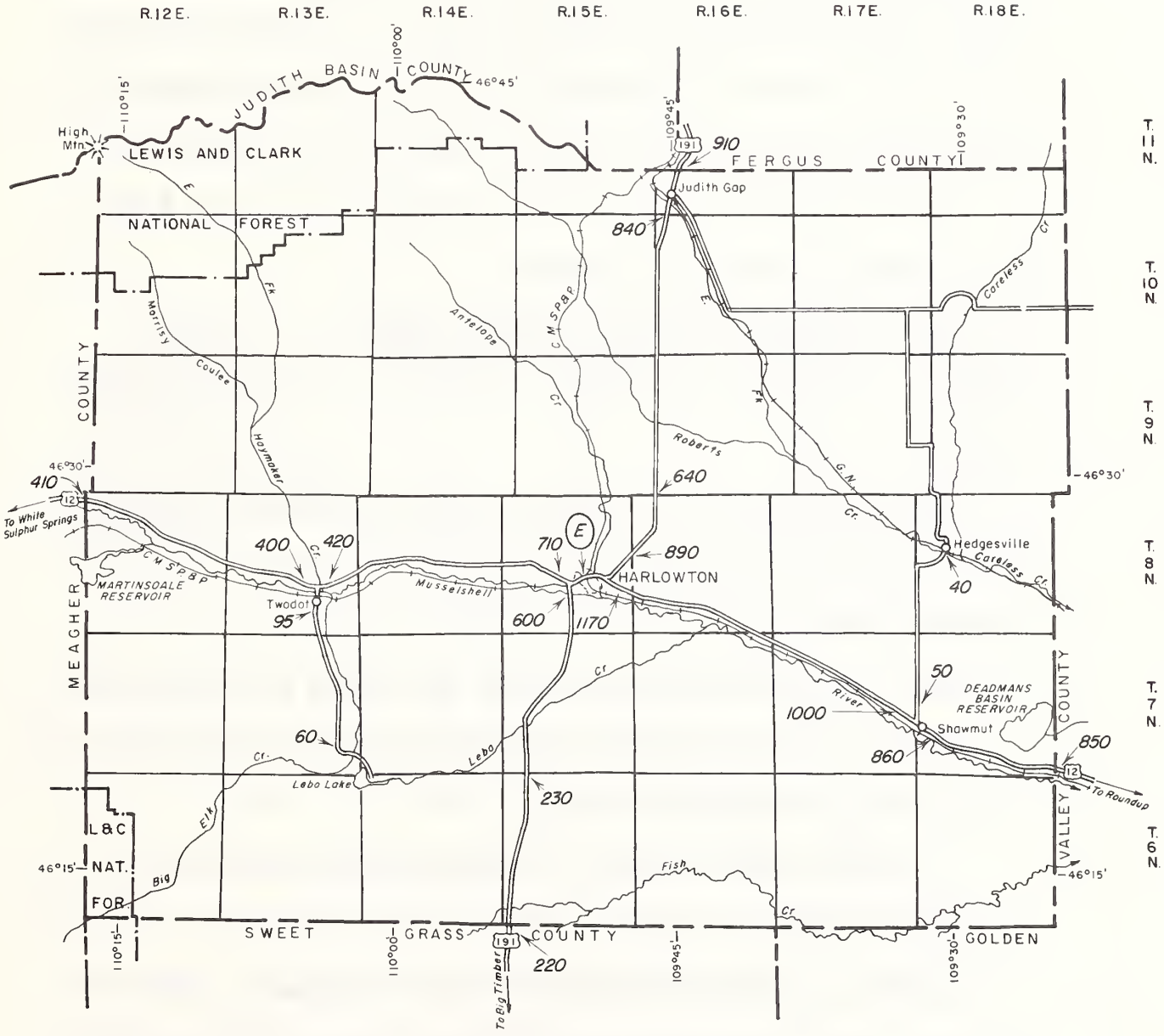
Rail service in the District is provided by the Milwaukee Railroad which passes through Shawmut, Harlowton, and Two Dot. At Harlowton it extends northward through Judith Gap and on to Lewistown and Great Falls. The Burlington Northern Railroad passes through the northeastern portion of the county and Judith Gap connecting Billings with Great Falls.

Salt-Creek trucking firm connecting Billings with Helena also serves Shawmut, Harlowton, and the Two Dot communities.

MARKETING Nearly all the small grains produced in the area are marketed through local elevators and then shipped by rail or truck to terminal markets.

Livestock are generally trucked to auction yards outside the county or sold directly off the ranch to buyers.

LOCATION MAP



TRANSPORTATION AND MARKETING

240 Average Traffic Count (24 Hour Period)

(E) *Elevator*

TRANSPORTATION AND MARKETING

WHEATLAND COUNTY, MONTANA

JULY 1975

5 0 5 10 MILES

SCALE 1:500,000

WATER RESOURCES

The water resources of the District are one of its most important assets. Water is essential for domestic, agricultural, industrial, wildlife ard recreational uses. As demand for these various uses increases, planning for the use and development of water in the District will become an important consideration.

Three reservoirs with storage capacity in excess of 4,000 ac. ft. supply water for irrigation.

Bair Reservoir located in Meagher County at the head of the North Fork of the Musselshell River has a storage capacity of 7,029 ac. ft.

Martinsdale Reservoir located one mile southeast of Martinsdale in Wheatland and Meagher counties has a storage capacity of 23,105 ac. ft.

Bair and Martinsdale Reservoirs, both owned by the Montana Department of Natural Resources and Conservation, are referred to as the Upper Musselshell Project.

A private owned reservoir located south of Two Dot has a storage capacity of 4,255 ac. ft.

Besides these three reservoirs there are numerous smaller privately owned developments with storage capacity of less than 4,000 ac. ft. each.

Deadman's Basin located approximately five miles east of Shawmut in Wheatland County has a storage capacity of 76,900 ac. ft. This reservoir is filled by a supply canal from the

Musselshell river. The canal also furnishes water for irrigation in Wheatland County. The water from the reservoir is used for irrigation in Golden Valley and Musselshell Counties.

The current charges for irrigation water in this area run from $1.35 per acre foot from Deadman's Basin to $2.20 per acre foot from the Upper Musselshell Project.

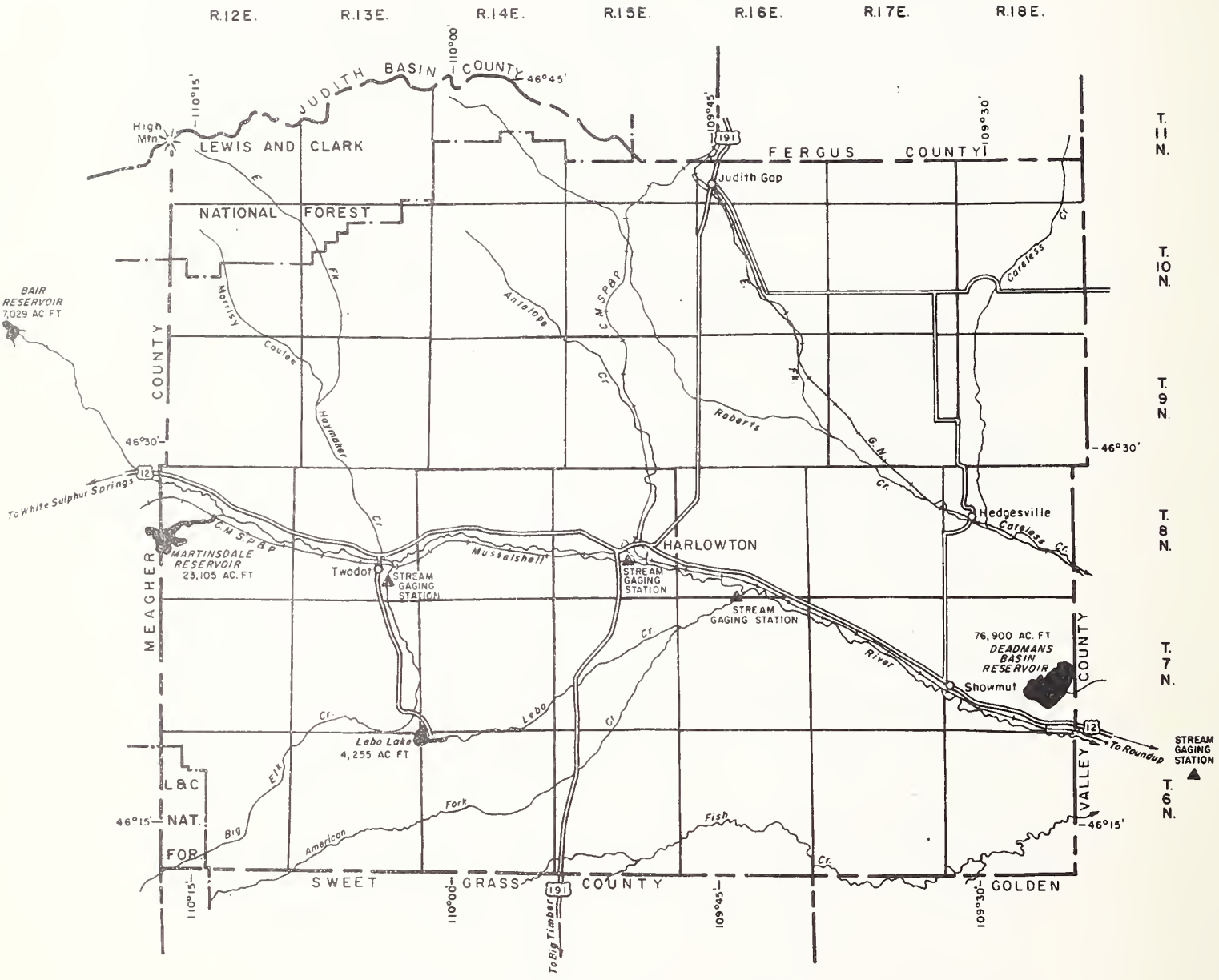
The list below shows the average annual runoff of the major streams in Wheatland County.*

STREAM	Years of Records	Drainage Area sq. mi.	Average Runoff	Runoff A.C. Average
Big Elk Creek	3	98.3	12.6	9,140.
Musselshell River Harlowton	60	1,125.	160.	115,900.
American Fork Creek	21	166.	36.	22,440.
Musselshell River Ryegate	24	1,979.	169.	122,400.

Part of the city of Harlowton is located on the flood plain of the Musselshell River and Jaw Bone Creek. A watershed project has been constructed on the Jaw Bone Creek to protect the city from flood danger. A statement in the Harlowton paper June 22, 1967 concerning the flood that year reads "The New Dams of Harlowton, Impounded Water to Depth of 16 Feet Covering About Eight Acres. Unquestionable there would have been at least four onrushes of water into town had the dams not been there."

* "Catalogue of Stream gaging Stations in Montana", Montana Dept. of Natural Resources and Conservation, 1972.

LOCATION MAP



WATER RESOURCES

WHEATLAND COUNTY, MONTANA

JULY 1975

5 0 5 10 MILES

SCALE 1:500,000

SECTION IV
PROBLEMS & OPPORTUNITIES

It is difficult to define problems and opportunities in one resource area without involving one or more additional areas. Therefore, the problems and opportunities listed in each of the following resource areas may be repeated in another or if not they may affect an area but not be stated.

The District supervisors do not mean to imply that the problems, assets and opportunities listed herein are complete for each area, nor that those areas which do not have problems, assets, and opportunities listed are without problems.

While a recognition of problems is necessary to give direction, the inventory will assist in further discovery and definition of problems, assets and opportunities.

Some of the major items which the supervisors feel are of extreme importance to the District and its operations are listed below. These items will be stressed by the supervisors.

1. Wheatland County needs an updated and complete soil survey. Many of the resource decisions must be based on soil capabilities and interpretations.

2. The supervisors will continue to stress the need for technicial assistance provided by the District.

3. The supervisors will continue to carry out their responsibilities under S.B. 310 and other laws dealing with sedimentation and resource protection.

4. The supervisors will continue to assist the city-county planning board with its activities.

WATER RESOURCES

Water is rapidly becoming a priceless resource and there are increasing demands to improve its quality. Community growth, agricultural needs, recreational uses and industrial developments are dependent on adequate supplies of good quality water.

ASSETS

1. There is an abundance of water for the present irrigated land.
2. There is good potential for recreational uses.
3. The water is of good quality.

PROBLEMS

1. There is need for more and better distribution systems.
2. There needs to be more control of the delivery of stored water.
3. There is mixing and loss of underground water due to exploration and development.
4. Excess run-off water is causing flood damage.

OPPORTUNITIES

1. More land can be developed for irrigation.
2. There is potential for water based recreational development.
3. More water could be stored.
4. There are possibilities for more and better distribution systems.

RANGE AND PASTURE

The improvement of our environment and a potential for increased income are available to local ranchers and the general public through better rangeland management. Approximately 82% of the agricultural income is derived from the sale of livestock and livestock products. Range improvement will directly reduce soil losses from wind and water erosion. Water and air pollution will be minimized. Stream flow stabilization and a sediment free water supply will result from improved range management.

ASSETS

1. 55% of the rangeland is in good to excellent condition.
2. Native grasses are of good quality.
3. Good grass reduces erosion and water loss, making good stockwater both surface and subsurface.
4. Good range improves wildlife habitat.

PROBLEMS

1. 45% of the rangeland is in fair to poor condition.
2. 22% of the land is not under a conservation plan.
3. Predators and rodents create problems to both livestock and wildlife.
4. Shallow soils in some areas limit potential for greater increases in production.

OPPORTUNITIES

1. Increasing the condition of range would provide economic improvement to local businesses.
2. District has the opportunities to assist the Wheatland County Range Program.
3. There is potential for seeding more tame grasses.

TRANSPORTATION AND MARKETING

Transportation and Marketing is an important aspect of any agricultural enterprise. Both the quality and availability has much to do with the prices agricultural producers receive for their goods.

ASSETS

1. There are good transportation facilities.

PROBLEMS

1. There is no community facility for weighing or receiving livestock and grain.

OPPORTUNITIES

1. Development of feeder type operations to use locally growr products.

2. Develop facilities for weighing and receiving livestock and grain.

CROPLAND

Stronger grain prices and other agricultural products have encouraged producers to intensify production by bringing idle land into production, and to modify established cropping patterns, and bring new land into prodiction.

District supervisors urge, however, that producers consider all available alternatives and be certain of the soil suitability before making radical changes in their operations.

The loss of valuable topsoil takes years to replace.

ASSETS

1. A majority of the land is under good conservation practices.
2. Increasing production helps the county tax base and the economy of the area.
3. A high grade of cereal grain is produced.

PROBLEMS

1. Climate and soil condition are not conducive to high production.
2. Marginal land is under production.

OPPORTUNITIES

1. Educate producers toward the type of soils that should be cropped.
2. Encourage production of grass seed or other crops on marginal land.
3. Increase the amount of land now under conservation practices.

LAND CAPABILITY CLASSIFICATION

With the wide fluctuation in grain and cattle prices, land use has varied from year to year. As a result the land is not being used to its fullest capability.

An ongoing education program is planned by the District to help the owners and operators to use the land within its various capabilities.

ASSETS

1. 78% of the land is under conservation plans.

PROBLEMS

1. Class 6 land presently being cropped is not suitable for cultivation.
2. Saline areas are increasing yearly.
3. Block farming is practiced within the District.
4. All types of cropland are not being used to their fullest extent.

OPPORTUNITIES

1. The District will inform the people as to the production capabilities of all class lands.
2. The District will stress stripcropping and stubble mulch practices to curb wind erosion.

FISH AND WILDLIFE RESOURCES

Fish and Wildlife are an important resource in the District. With the increased growth of outdoor oriented recreation, this resource will become an important consideration in the overall resource development program of the District.

ASSETS

1. Fee hunting limits the numbers of hunters in a particular area and provides an economic return to the land owner.

2. Fish farms establish better opportunities for fishing facilities.

3. All types of recreation and hunting are available.

4. Trapping limits the number of predators found in the District.

PROBLEMS

1. More pressures are being placed on land owners each year for hunting.

2. A few careless and irresponsible people have caused some destruction and poor relations between land owners and recreationists.

3. Public access and developed facilities are inadequate.

4. The populations of wildlife are not uniformly distributed enough to even out the hunting and fishing pressure.

OPPORTUNITIES

1. Cooperation between sportsmen and landowners should be encouraged.

2. Information should be distributed on the species of fish adaptable to fish farming and the economice of fish farming.

3. Encourage where practical, the development of wildlife habitat areas in conservation planning.

4. Appropriate people should encourage public access.

CONSERVATION PLANS

Many operators have signed cooperative agreements with the District and have completed conservation plans for the development of the natural resources. Because of the constant change in land use, land ownership, and consolidation, there is a continuing need for revision of these plans as well as expanding planned conservation to each acre in the District.

ASSETS

1. The District has a high percentage of cooperators among farmers and ranchers.

2. The plans show benefits (economic & conservation) of various practices.

3. It gives ranchers and farmers a direction to land use.

PROBLEMS

1. There is a lack of technicians to follow-up the basic plan.

2. Numerous permits required to perform conservation work result in jobs not getting done.

3. The economic situation, as related to applying practices, is a problem.

4. Data is needed to prove the economics of conservation work.

OPPORTUNITIES

1. Striving for additional people for proper follow-up of planned work is needed.

2. District board members will encourage landowners to develop a conservation plan.

3. Distribute information on the economics of conservation work.

CLIMATE

Probably the biggest hazard to any agricultural enterprise is the climate. Man as yet has had little success in changing the climate to meet his needs. However, there are things which can be done to lessen the affect of adverse climatic conditions or to take advantage of its positive aspects.

ASSETS

1. The greatest amount of precipitation occurrs during the growing season.

2. The wind keeps the ground open for winter grazing.

3. There is adequate snow melt from high elevations to keep the irrigation dams full.

4. There is not enough variation in summer temperatures to destroy crops.

PROBLEMS

1. The high winds can destroy crops, farm land, and has a drying effect.

2. Cold springs hinder fast growth.

3. Late spring storms cause loss of livestock and wildlife.

4. Low precipitation and short growing seasons limit the types of crops that can be grown.

5. Hail and floods cause a great deal of damage.

OPPORTUNITIES

1. Adequate runnoff is available for storage of stock water, irrigation water, and water for recreational purposes.

2. More windbreaks could be established to protect both farmsteads and livestock.

3. There is potential for wind generated power.

SECTION V
IMPLEMENTATION - ADOPTION

IMPLEMENTATION

There are numerous techniques for implementing different elements of the District's program. However, the use of each technique will be specifically fitted to the policies, goals and objectives of the District.

A. General Implementation Tools

1. Conservation District Organization, Plan of Work Projects.

The Conservation District law provides broad authorities for implementing a Conservation District program. The District will provide leadership, and utilize all possible assistance in carrying out their program. Standing committees and special committees, such as the Range Resource Committee, will be used as needed to further the objectives of the program.

2. Conservation District Cooperator Agreements.

Voluntary agreements are negotiated between the Conservation District and the individual land occupier or group, association, or entity of government to supply certain services according to a plan such as a Farm or Ranch Conservation Plan, a Range Management Plan, or Engineering plans for a specific conservation practice.

3. Annual Plan of Work.

Based on program goals and objectives, the supervisors will request assistance from local state and federal agencies as needed to develop an annual plan of work.

4. Zoning.

Zoning is an exercise of the police power, i.e., the power of the state to regulate the interests of the health, safety, and general welfare of the public. Some of the purposes of zoning include environmental preservation, limitation of congestion, protection of property values and adequate provision of community services. The county commissioners may establish zones or districts for different uses of land and may regulate developmental patterns, building use and the area around buildings.

Section 16-4704, R.C.M. 1947, provides that zoning regulations shall be in accordance with the comprehensive plan. Comprehensive ordinances apply to an entire planning area and in the absence of such a plan may place the zoning ordinance in questionable legal status.

If a jurisdiction is experiencing emergency land use problems, a temporary interim zoning regulation may be enacted pending the completion of a comprehensive plan within a reasonable time. Such authority is provided to the county commissioners in Section 16-4711, R.C.M. 1947.

5. Land Use Regulations

Section 76-109, R.C.M. 1947, provides Conservation District supervisors with the authority to formulate land use regulations within the District in the interests of conserving soil and water resources and preventing and controlling erosion. A referendum is then submitted to qualified electors for their approval or disapproval of the regulation.

6. Floodway Management.

Conservation Districts can contribute data to and become involved in floodway management. Pursuant to the Montana Floodway Management and Regulation Act of 1971, a floodway management program may be carried out as follows.

a) A request for flood delineation study is made by the local subdivision of government to the Montana Department of Natural Resources and Conservation.

b) Completed studies are used if available, and federal agencies (U.S. Geological Survey, S.C.S., Corp of Engineers, etc.) are contacted by the Department for technical assistance.

c) After delineation, the Department conducts a public hearing on the establishment of the designed floodway. As a result, floodway lines will be recorded and data furnished to local officials.

d) The local governing body then has a maximum of one year to establish and enforce floodway land use regulations at least as stringent as those established by the Department.

e) After local regulations are in effect, or one year after transmission of the floodway data, permits must be obtained before establishing or altering any artificial obstruction within the designated floodway.

7. Subdivision Regulations.

The Montana Subdivision and Platting Act of 1973 requires each local governing body to adopt and enforce subdivision regulations by July 1, 1974. These regulations must meet or exceed state minimum requirements and must contain provisions for an environmental assessment to be submitted by the subdivider. Local review procedures as District representation on county planning boards will ensure that the Conservation District is afforded an opportunity to evaluate each proposed subdivision within the District.

B. Assistance

1. Financial and Technical.

Major types of assistance available from federal agencies include the Soil Conservation Service and Agricultural Stabilization and Conservation Service programs. In addition, water and sewer facility grants and loans from the Farmers Home Administration and Department of Housing and Urban Development "701" planning grants are also available.

2. Private Assistance

A source of help often overlooked in planning and implementation of programs is the private sector. Citizen groups, area banks or industries, and chambers of commerce may be crucial to plan implementation and should be involved in planning throughout the process.

RESOLUTION OF ADOPTION

On June 7, 1976 at Harlowton, at a regular meeting of the board of supervisors, consisting of Chairman Paul Fochs, Vice Chairman Arville Lammers, Sec. Tres. Robert Brummond, and supervisors Dwain Meyer, Dick Freier, Don Berg, and Andy Eggenberger did meet and review the prepared Upper Musselshell Conservation District program, and after such review did mutually agree and resolve that such district program be adopted.

Signed this 12th day of July 1976

Supervisors

Paul P. Fochs
CHAIRMAN

Arville G. Lammers
VICE CHAIRMAN

Robert O. Brummond
SEC. TREASURER

J. Dwain Meyer
SUPERVISOR

Andrew J. Eggenberger
SUPERVISOR

Dick Freier
SUPERVISOR

Donald A. Berg
SUPERVISOR